

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



# **Academic Program and Course Description Guide**

**2025**

## **Introduction:**

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

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

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

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

## **Concepts and terminology:**

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

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

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

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

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

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

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

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

## Academic Program Description Form

University Name: Al-Furat Al-Awsat Technical University

Faculty/Institute: Al-Mussaib Technical Institute

Scientific Department: Electrical Techniques

Academic or Professional Program Name: Diploma

Final Certificate Name: Diploma in Electrical techniques

Academic System: Annual

Description Preparation Date: 2024-2025

File Completion Date: 3/2/2025



Signature:

Head of Department Name:

Mohammed Salih Hassan

Date: 3/3/2025



Signature:

Scientific Associate Name:

Dr. Mohammed H. Sabry

Date:

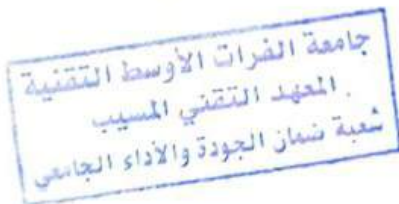
The file is checked by: **Walaa Hussein Allawi**

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:



Approval of the Dean

4.3.2025

## **1. Program Vision**

The department has a clear vision of the current and future needs of society in general and the electrical energy sector in particular, and the scientific, qualitative and technical specifications required for graduates and scientific plans to meet these needs.

## **2. Program Mission**

Graduating competent technical technicians qualified to perform the technical tasks assigned to them, capable of innovation and creative solutions, responding to the requirements of the labor market, and able to compete with their counterparts from other universities while adhering to professional ethics.

Openness to companies and directorates of the Ministry of Electricity and the Ministry of Industry to integrate the theoretical side and the applied technical side.

## **3. Program Objectives**

The overall objectives assigned to the Electrical Technologies Department/Power Branch stem from the growing importance of the electricity sector, as electrical energy is considered the cornerstone in building the elements of cultural and economic advancement, with the services it provides that meet human material and service requirements. Therefore, the department aims to achieve the following:

- 1) Preparing technical technicians capable of effectively contributing to the operation and management of electrical networks.
- 2) Electrical power generation in thermal, gas, steam and hydroelectric plants.
- 3) Transmitting electrical energy through high-voltage towers from generating stations to consumers in cities and villages.
- 4) Working in various types of distribution networks, which include a huge number of distribution and power transformers.
- 5) Design and implementation of electrical and lighting installations for commercial

and industrial buildings and hospitals.

#### 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	3	6	4.7%	
College Requirements	6	26	20.6%	
Department Requirements	13	74	74.6%	
Summer Training				
Other				

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

#### 7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
1 <sup>st</sup> year		Electrical circuits and measurements	2	2
		Electrical installations/1	2	2
		Electronics	2	2
		Factories	-	6

		<b>Mathematics</b>	<b>2</b>	<b>-</b>
		<b>Computer applications/1</b>	<b>1</b>	<b>-</b>
		<b>Engineering and electrical drawing</b>	<b>-</b>	<b>3</b>
		<b>Human rights and democracy</b>	<b>1</b>	<b>-</b>
		<b>Occupational safety</b>	<b>2</b>	<b>-</b>
		<b>English language/1</b>	<b>1</b>	<b>-</b>
		<b>Digital electronics</b>	<b>2</b>	<b>2</b>
		<b>Arabic language/1</b>	<b>1</b>	
<b>2<sup>nd</sup> year</b>		<b>Electrical machines</b>	<b>2</b>	<b>3</b>
		<b>Electrical networks</b>	<b>2</b>	<b>2</b>
		<b>Power electronics</b>	<b>2</b>	<b>3</b>
		<b>Maintenance laboratories workshop</b>	<b>-</b>	<b>4</b>
		<b>Electrical installations/2</b>	<b>2</b>	<b>2</b>
		<b>Computer applications/2</b>	<b>1</b>	<b>-</b>
		<b>Electrical drawing</b>	<b>-</b>	<b>3</b>
		<b>Programmable logic control (PLC)</b>	<b>1</b>	<b>2</b>
		<b>The project</b>	<b>-</b>	<b>2</b>
		<b>English language/2</b>	<b>1</b>	<b>-</b>
		<b>Crimes of the baath regime in iraq</b>	<b>1</b>	<b>-</b>
	<b>Arabic language/1</b>	<b>1</b>	<b>-</b>	

## 8. Expected learning outcomes of the program

### Knowledge

A-1) Students can obtain knowledge, understanding, principles, theories, and fundamentals in the field of electrical technologies, in addition to the mathematics, equations, and algorithms necessary to solve and simplify electrical circuits.

A-2) It enables students to understand advanced modern scientific topics and computer software that are used in the field of analysis, design and problem solving of electrical systems and the foundations of their theoretical applications.

A-3) The student will be familiar with international electrical technology standards and regulations, estimate market needs, apply quality management concepts in the

- The student obtains knowledge, understanding, principles, theories and basics in the field of electrical technologies.

- Students' ability to understand advanced modern scientific topics and computer software that are used in the field of analysis, design, and problem solving for electrical systems.

- Students' knowledge of international electrical technology standards and regulations and estimation of market needs.

<p>labor market, and prepare electrical plans.</p> <p>A-4) The student must adhere to the ethics of practicing the profession and the ability to demonstrate high professional competence while adhering to the requirements of occupational safety and environmental preservation.</p>	
<p><b>Skills</b></p>	
<p>Preparing technical technicians capable of effectively contributing to the operation and management of electrical networks in the following areas:</p> <p>B-1) Electrical energy generation in thermal, gas, steam and hydroelectric stations.</p> <p>B-2) Transmitting electrical energy through high-voltage towers from generating stations to consumers in cities and villages.</p> <p>B-3) Working in distribution networks of various types, which include a huge number of distribution and capacity solutions.</p> <p>B-4) Design and implementation of electrical and lighting installations for commercial and industrial buildings and hospitals, and learning how to use computers and enter software.</p>	<ul style="list-style-type: none"> <li>• Developing the possibility of generating electrical energy in thermal, gas, steam and hydroelectric stations.</li> <li>• Developing the skill of working in distribution networks.</li> <li>• Developing the skill of design and implementation of electrical installation works.</li> </ul>
<p><b>Ethics</b></p>	
<p>C-1) Encouraging the development of thought and guesswork.</p> <p>C-2) Developing search skills in Internet search engines.</p> <p>C-3) Using brainstorming to produce creative ideas.</p>	<ul style="list-style-type: none"> <li>• Emphasizing the importance of developing thought and speculation.</li> <li>• Helping them develop research skills.</li> <li>• Encouraging the use of brainstorming skills.</li> </ul>

<p><b>9. Teaching and Learning Strategies</b></p>	
<ol style="list-style-type: none"> <li>1) Brainstorming.</li> <li>2) The lecture.</li> <li>3) Discussion.</li> </ol>	

## 10. Evaluation methods

- 1) Theoretical lectures.
- 2) Practical application of lectures in laboratories related to the subject.
- 3) Continuous follow-up by the educational advisor for the students of each academic group.
- 4) Conducting research and working papers.
- 5) Analysis of technical problems by the teaching and technical staff with the participation of students.
- 6) Committees for discussing graduation research for final stage students.

## 11. Faculty

### Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Lecture	mechanical Engineering	applied			1	
Lecture	mechanical Engineering	Renewable energy			1	
Assist. Lecture	Since of Physics	Renewable energy			1	
Assist. Lecture	Electrical Engineering	Electrical machinery and power electronics engineering			1	
Assist. Lecture	mechanical Engineering	Fluids				
Assist. Lecture						

Assist. Lecture	law	Criminal law				
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### **Professional Development**

#### **Mentoring new faculty members**

- 1) Attending local and international courses in general and specific specializations to increase on-the-job skills.
- 2) Publishing scientific research for the purpose of raising scientific production.
- 3) Using modern teaching skills and methods.

#### **Professional development of faculty members**

- 1) Supporting self-efforts, such as reading and reading, by faculty members.
- 2) Publishing scientific research for the purpose of raising the department's scientific output and obtaining promotion and evaluation.
- 3) Using modern methods in teaching students.

### **12. Acceptance Criterion**

- 1) **Central admission for middle school students.**
- 2) **Direct admission of professional study students.**

### **13. The most important sources of information about the program**

Public libraries, websites, scientific courses and seminars.

### **14. Program Development Plan**

- 1) Providing academic support capabilities in organizing field visits.
- 2) Providing the appropriate classroom environment that enables the teacher to diversify his teaching strategies.
- 3) Hosting experts from outside the institute, or from the work environment, to benefit from their recommendations.

Program Skills Outline															
				Required program Learning outcomes											
Year/L level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A 3	A4	B1	B2	B3	B4	C1	C2	C3	C4
1 <sup>st</sup> year		Electrical circuits and measurements	Basic	✓		✓	✓		✓		✓	✓	✓	✓	
		Electrical installations/1	Basic		✓		✓	✓		✓		✓		✓	
		Electronics Factories	Basic	✓		✓						✓	✓	✓	
		Mathematics	Basic		✓			✓				✓			✓
		Computer applications/1	Basic	✓		✓	✓		✓			✓			
		Engineering and electrical drawing	Basic	✓			✓	✓			✓		✓	✓	✓
		Human rights and democracy	Basic		✓				✓			✓			
		Occupational safety	Basic	✓		✓		✓	✓	✓		✓	✓	✓	✓

		<b>English language/1</b>	<b>Basic</b>	✓	✓		✓			✓	✓	✓	✓		
		<b>Arabic language/1</b>		✓	✓					✓		✓		✓	
		<b>Digital electronics</b>	<b>Basic</b>		✓			✓			✓	✓			
<b>2<sup>st</sup> year</b>		<b>Electrical machines</b>	<b>Basic</b>	✓					✓			✓		✓	
		<b>Electrical networks</b>	<b>Basic</b>	✓			✓	✓	✓		✓			✓	✓
		<b>Power electronics</b>	<b>Basic</b>			✓					✓		✓		
		<b>Maintenance laboratories workshop</b>	<b>Basic</b>	✓		✓			✓		✓		✓	✓	✓
		<b>Electrical installations/2</b>	<b>Basic</b>	✓	✓		✓		✓		✓			✓	
		<b>Computer applications/2</b>	<b>Basic</b>	✓					✓				✓		✓
		<b>Electrical drawing</b>	<b>Basic</b>				✓				✓				✓
		<b>Programmable logic control (PLC)</b>	<b>Basic</b>	✓					✓				✓		
		<b>The project</b>	<b>Basic</b>	✓			✓				✓		✓	✓	

		<b>English language/2</b>	<b>Basic</b>	✓	✓				✓	✓			✓	
		<b>Baath Party crimes</b>	<b>Basic</b>	✓	✓			✓			✓		✓	
		<b>Arabic language/2</b>		✓	✓			✓		✓	✓			

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

# 1<sup>ST</sup> STAGE

## Course Description Form

<b>1. Course Name:</b>	
Electrical circuits and measurements	
<b>2. Course Code:</b>	
<b>3. Semester / Year:</b>	
First + Second/First	
<b>4. Description Preparation Date:</b>	
22/12/2024	
<b>5. Available Attendance Forms:</b>	
Weekly (theoretical + practical)	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
120 hours / 8 units	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Mohammad Ubais Youssef. Email: <a href="mailto:inm.moh2@atu.edu.iq">inm.moh2@atu.edu.iq</a>	
<b>8. Course Objectives</b>	
Course Objectives	<ul style="list-style-type: none"><li>• Study the various calculations in alternating current and direct current circuits.</li><li>• Learn about the various theories to study these accounts.</li><li>• Learn about different measuring devices.</li></ul>

## **Learning Outcomes, Teaching & Learning Methods, and Assessment Methods**

### **Learning Outcomes**

#### **1. Knowledge Outcomes**

1. Explain the fundamental laws of direct current (DC) and alternating current (AC) (Ohm's law, Kirchhoff's laws, power).
2. Interpret the theoretical principles of electrical circuit analysis using traditional methods (node, mesh, transformations).
3. Describe the characteristics of basic electrical elements (resistors, capacitors, inductors, voltage and current sources).
4. Explain the principles of electrical measuring instruments (ammeter, voltmeter, ohmmeter, power and energy meters).

#### **2. Skills Outcomes**

- 1 Analyze simple and complex electrical circuits using mathematical methods.
- 2 Apply practical measurement techniques for current, voltage, resistance, and power in the laboratory.
- 3 Employ measuring instruments correctly and safely to evaluate circuit performance.
- 4 Use simulation software (such as Multisim or MATLAB/Simulink) to analyze electrical circuits.

#### **3. Attitude / Higher-Order Thinking Skills (Competencies)**

- 1 Commit to safety standards when dealing with electrical circuits and measuring devices.
- 2 Work collaboratively in laboratories to perform practical experiments.
- 3 Think critically when interpreting experimental results and comparing them with theoretical values.
- 4 Demonstrate accuracy and discipline in preparing electrical measurement reports.

### **Teaching & Learning Methods**

- Theoretical lectures: explaining fundamental electrical laws, presenting solved examples of circuit analysis, using visual demonstrations.
- Laboratory and practical training: conducting experiments, using measuring devices, applying practical circuits, using simulations.
- Active learning: group discussions, solving applied problems collaboratively, case studies.
- Self-learning: reviewing references, preparing lab reports, researching modern techniques.
- Practical and theoretical assessment: quizzes, lab reports, simulation projects.

## **9. Teaching and Learning Strategies**

**Strategy** | Lectures using modern methods, traditional methods, and laboratories.

## **10. Course Structure**

<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	4	Understand the lecture topic	The system of units used in electricity.	Lecture + Laboratory	Homework + Quiz
2	4	Understand the lecture topic	Connecting resistors in series, parallel, mixed, star, and triangle connections.	Lecture + Laboratory	Homework + Quiz
3	4	Understand the lecture topic	Applications on series, parallel, mixed, star, and triangle circuits.	Lecture + Laboratory	Homework + Quiz
4	4	Understand the lecture topic	Kirchhoff's laws.	Lecture + Laboratory	Homework + Quiz
5	4	Understand the lecture topic	Maxwell with solutions examples.	Lecture + Laboratory	Homework + Quiz

6	4	Understand the lecture topic	Thevenin's theorem.	Lecture + Laboratory	Homework + Quiz
7	4	Understand the lecture topic	Norton's theory.	Lecture + Laboratory	Homework + Quiz
8	4	Understand the lecture topic	Congruence theory.	Lecture + Laboratory	Homework + Quiz
9	4	Understand the lecture topic	Alternating quantities.	Lecture + Laboratory	Homework + Quiz
10	4	Understand the lecture topic	Study the effect of alternating current on a circuit.	Lecture + Laboratory	Homework + Quiz
11	4	Understand the lecture topic	Alternating current in a circuit containing resistance and inductance in series.	Lecture + Laboratory	Homework + Quiz
12	4	Understand the lecture topic	Alternating current in a circuit containing resistance and inductance in parallel.	Lecture + Laboratory	Homework + Quiz
13	4	Understand the lecture topic	Find the relationship between current and voltage in the three cases.	Lecture + Laboratory	Homework + Quiz
14	4	Understand the lecture topic	Resonance circuits.	Lecture + Laboratory	Homework + Quiz
15	4	Understand the lecture topic	Parallel resonance circuit.	Lecture + Laboratory	Homework + Quiz
16	4	Understand the lecture topic	Application of theories such as Norton's theory and Thevenin's theory.	Lecture + Laboratory	Homework + Quiz
17	4	Understand the lecture topic	Power in alternating current circuits	Lecture + Laboratory	Homework + Quiz
18	4	Understand the lecture topic	The theory of transmitting the greatest possible power in alternating current circuits.	Lecture + Laboratory	Homework + Quiz
19	4	Understand the lecture topic	Practical methods for measuring resistances.	Lecture + Laboratory	Homework + Quiz
20	4	Understand the lecture topic	Solve applied examples of three-phase alternating current.	Lecture + Laboratory	Homework + Quiz
21	4	Understand the lecture topic	Methods for measuring power for three-phase loads.	Lecture + Laboratory	Homework + Quiz
22	4	Understand the lecture topic	Magnetism.	Lecture + Laboratory	Homework + Quiz
23	4	Understand the lecture topic	Magnetic flux.	Lecture + Laboratory	Homework + Quiz
24	4	Understand the lecture topic	Solve applied examples of magnetism.	Lecture + Laboratory	Homework + Quiz
25	4	Understand the lecture topic	Self-inductance of the coil.	Lecture + Laboratory	Homework + Quiz
26	4	Understand the lecture topic	Curves of growth and decay of current from an inductive circuit.	Lecture + Laboratory	Homework + Quiz
27	4	Understand the lecture topic	Charging and discharging capacitors.	Lecture + Laboratory	Homework + Quiz
28	4	Understand the	Measuring devices.	Lecture +	Homework +

		lecture topic		Laboratory	Quiz
29	4	Understand the lecture topic	Iron core measuring device.	Lecture + Laboratory	Homework + Quiz
30	4	Understand the lecture topic	Watt meters measuring devices.	Lecture + Laboratory	Homework + Quiz

### 11.Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	INTRODUCTORY CIRCUIT ANALYSIS / Robert L. Boylestad
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Al-Musayyib Technical Institute website.

## Course Description Form

<b>1. Course Name:</b>					
Electrical installations/1					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
120 hours / 8 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Yasser Abd Nour Jabbar					
Email: <a href="mailto:yasser.jebbar.ims@atu.edu.iq">yasser.jebbar.ims@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Identify electrical materials.</li> <li>• Identify the wiring systems used in laboratories and homes.</li> <li>• Establishing and installing electrical machines and methods of controlling and protecting various loads in the foundation.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand the lecture topic	An overview of the curriculum vocabulary for the subject and scientific sources such as methodological and auxiliary books.	Lecture + Laboratory	Homework + Quiz
2	4	Understand the lecture topic	Principles of electricity And the components of the electrical circuit.	Lecture + Laboratory	Homework + Quiz
3	4	Understand the lecture topic	Electrical conductive materials.	Lecture + Laboratory	Homework + Quiz
4	4	Understand the lecture topic	Insulation Materials.	Lecture + Laboratory	Homework + Quiz
5	4	Understand the lecture topic	Magnetic properties of materials.	Lecture + Laboratory	Homework + Quiz
6	4	Understand the lecture	Magnetic circuits.	Lecture + Laboratory	Homework + Quiz

		topic			
7	4	Understand the lecture topic	Mechanical properties of electrical materials.	Lecture + Laboratory	Homework + Quiz
8	4	Understand the lecture topic	The stages that electrical energy passes through.	Lecture + Laboratory	Homework + Quiz
9	4	Understand the lecture topic	Initial principles on how to prepare a consumer from a secondary station, the materials needed for that, and the type of consumer.	Lecture + Laboratory	Homework + Quiz
10	4	Understand the lecture topic	Types of switches used in electrical installations and their importance.	Lecture + Laboratory	Homework + Quiz
11	4	Understand the lecture topic	Protection devices used in electrical installations (fuses) or fuses.	Lecture + Laboratory	Homework + Quiz
12	4	Understand the lecture topic	Circuit Breakers.	Lecture + Laboratory	Homework + Quiz
13	4	Understand the lecture topic	Electrical Wiring Systems.	Lecture + Laboratory	Homework + Quiz
14	4	Understand the lecture topic	Domestic electrical installations.	Lecture + Laboratory	Homework + Quiz
15	4	Understand the lecture topic	Grounding.	Lecture + Laboratory	Homework + Quiz
16	4	Understand the lecture topic	Lightning rod.	Lecture + Laboratory	Homework + Quiz
17	4	Understand the lecture topic	Electric shock.	Lecture + Laboratory	Homework + Quiz
18	4	Understand the lecture topic	Protection against ground leakage current.	Lecture + Laboratory	Homework + Quiz
19	4	Understand the lecture topic	Single and three phase kwh meter.	Lecture + Laboratory	Homework + Quiz
20	4	Understand the lecture topic	Inspection and testing of domestic and industrial electrical installations.	Lecture + Laboratory	Homework + Quiz
21	4	Understand the lecture topic	Alert and alarm circuits.	Lecture + Laboratory	Homework + Quiz
22	4	Understand the lecture topic	Alarms and protection devices (open - closed) against fire and theft.	Lecture + Laboratory	Homework + Quiz

23	4	Understand the lecture topic	The calling system used in hotels, restaurants and hospitals.	Lecture + Laboratory	Homework + Quiz
24	4	Understand the lecture topic	DC Motors.	Lecture + Laboratory	Homework + Quiz
25	4	Understand the lecture topic	AC Motors.	Lecture + Laboratory	Homework + Quiz
26	4	Understand the lecture topic	Power circuits and control circuits.	Lecture + Laboratory	Homework + Quiz
27	4	Understand the lecture topic	Pneumatic collectors (actuators) Contactor.	Lecture + Laboratory	Homework + Quiz
28	4	Understand the lecture topic	Thermal relay against surges (installation - working theory - adjusting the current rating - uses).	Lecture + Laboratory	Homework + Quiz
29	4	Understand the lecture topic	TIMER	Lecture + Laboratory	Homework + Quiz
30	4	Understand the lecture topic	testing of electrical installations	Lecture + Laboratory	Homework + Quiz

### 11.Course Evaluation

First semester / 20 marks  
 Second semester/20 marks  
 Activity/10 marks  
 Final exam/50 marks

### 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Binding electrical installations/1.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Al-Musayab Technical Institute website.

## Course Description Form

<b>1. Course Name:</b>					
Electronics					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
28/3/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
120 hours / 8 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Mustafa Saleh hassan. Email: mostafa.hasan.ims@atu.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>The student will be able to become familiar with the various types of electronic components manufactured from semiconductors - their composition - their properties - their uses in electronic circuits - their applications - analysis of their electronic circuits, optoelectronic components and their applications.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand the lecture topic	Semiconductor theory.	Lecture + Laboratory	Homework + Quiz
2	4	Understand the lecture topic	Vaccination.	Lecture + Laboratory	Homework + Quiz
3	4	Understand the lecture topic	Semiconductor diodes.	Lecture + Laboratory	Homework + Quiz
4	4	Understand the lecture topic	The binary as a current unifier.	Lecture + Laboratory	Homework + Quiz
5	4	Understand the lecture topic	Full wave uniformity.	Lecture + Laboratory	Homework + Quiz
6	4	Understand the lecture topic	Filters.	Lecture + Laboratory	Homework + Quiz
7	4	Understand the lecture topic	Ripple factor, voltage multiplier, trimming circuits.	Lecture + Laboratory	Homework + Quiz
8	4	Understand the lecture topic	Zener diode (composition - Symbol E – properties).	Lecture + Laboratory	Homework + Quiz

9	4	Understand the lecture topic	Bipolar transistor.	Lecture + Laboratory	Homework + Quiz
10	4	Understand the lecture topic	Transistor characteristic curves.	Lecture + Laboratory	Homework + Quiz
11	4	Understand the lecture topic	Transistor bias circuits.	Lecture + Laboratory	Homework + Quiz
12	4	Understand the lecture topic	Collector bias - self-bias - feed-back bias - voltage divider bias - applied examples	Lecture + Laboratory	Homework + Quiz
13	4	Understand the lecture topic	DC equivalent circuit of the transistor.	Lecture + Laboratory	Homework + Quiz
14	4	Understand the lecture topic	Action points - rest point (Q-Point) applied examples	Lecture + Laboratory	Homework + Quiz
15	4	Understand the lecture topic	review	Lecture + Laboratory	Homework + Quiz
16	4	Understand the lecture topic	Transistor to amplify small signals.	Lecture + Laboratory	Homework + Quiz
17	4	Understand the lecture topic	Using a transistor to regulate voltage.	Lecture + Laboratory	Homework + Quiz
18	4	Understand the lecture topic	Junction field effect transistor.	Lecture + Laboratory	Homework + Quiz
19	4	Understand the lecture topic	Bias circuits.	Lecture + Laboratory	Homework + Quiz
20	4	Understand the lecture topic	Solving exercises	Lecture + Laboratory	Homework + Quiz
21	4	Understand the lecture topic	Solving exercises	Lecture + Laboratory	Homework + Quiz
22	4	Understand the lecture topic	Comparison between the types of FET (FET , MOSFET) and (BJT)	Lecture + Laboratory	Homework + Quiz
23	4	Understand the lecture topic	Light dependent resistor.	Lecture + Laboratory	Homework + Quiz
24	4	Understand the lecture topic	Phototransistor.	Lecture + Laboratory	Homework + Quiz
25	4	Understand the lecture topic	Transistor to amplify small signals.	Lecture + Laboratory	Homework + Quiz
26	4	Understand the lecture topic	Comparison between the types of FET (FET , MOSFET) and (BJT)	Lecture + Laboratory	Homework + Quiz
27	4	Understand the lecture topic	Light dependent resistor.	Lecture + Laboratory	Homework + Quiz
28	4	Understand the lecture topic	Phototransistor.	Lecture + Laboratory	Homework + Quiz
29	4	Understand the lecture topic	review	Lecture + Laboratory	Homework + Quiz
30	4	Understand the lecture topic	review	Lecture + Laboratory	Homework + Quiz

### 11. Course Evaluation

First semester / 20 marks  
Second semester/20 marks  
Activity/10 marks  
Final exam/50 marks

## 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electro-electronic binding.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Al-Musayab Technical Institute website.

## Course Description Form

<b>1. Course Name:</b>					
Workshop /1					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
28/1/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
180 hours / 6 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name/ mohammad salih Email: <a href="mailto:hs.muhamad.salih@atu.edu.iq">hs.muhamad.salih@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>The student acquires manual skills in using hand tools and measuring tools, operating devices and machines, and using them in every workshop.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	6	Introducing the student to the importance of the workshop, its work, and tools available.	Al-Barada workshop	Using tools and exercises.	Practical application
2					
3					
4	6	Introducing the student to the importance of the workshop, its work, and tools available.	Welding workshop	Using tools and exercises.	Practical application
5					
6					
7	6	Introducing the student to the importance of the workshop, its work, and tools available.	Plumbing workshop	Using tools and exercises.	Practical application
8					
9					
10	6	Introducing the student to the importance of the workshop, its work, and tools available.	Lathe workshop	Using tools and exercises.	Practical application
11					
12					
13	6	Introducing the student to the importance of the workshop, its work, and tools available.	Carpentry workshop	Using tools and exercises.	Practical application
14					
15					
16	6	Basic principles in industrial security.	Laboratories / Electricity	Using tools and exercises.	Practical application
17	6	Identify the standard diameters of used wires.			
18	6	Identify the different types of resistors.			
19	6	Identify the different types of files.			

20	6	Identify semiconductors, diodes, how to examine them and determine their polarities, and their uses.			
21	6	Identify the transistor.			
22	6	Printed and regular boards used in building electronic circuits.			
23	6	Practice making wooden molds with equal step, different step and getting to know metal molds			
24	6	Training on making files using different types of winding methods.			
25	6	Studying the parts of the water pump for the air cooler and identifying the types of mechanical and electrical faults and methods of treating them.			
26	6	Dismantling and assembling the parts of the water pump for the air cooler and operating them after reassembling them and correcting errors, if any.			
27	6	Training on drawing the coils of the water pump motor for the air cooler, rewinding + its coils, and conducting various types of tests, continuity testing.			
28	6	Earth leakage test, short circuit test in coils, polarity test, engine operation, and treatment of electrical and mechanical faults.			
29	6	Studying the theory of how the electric iron works and its parts, training on disassembling and assembling the iron's parts, and identifying the types of malfunctions and how to treat them.			
30	6	Studying the parts of a table fan, training in disassembling and reassembling it, and how to treat them.			

### 11. Course Evaluation

First semester / 50 marks

Second semester/50 marks

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Laboratory notebook for each workshop.
Main references (sources)	1) Winding electric motors / Dr. Qamer. 2) Reference in electrical transformers / SA Sticant , Franklin.
Recommended books and references (scientific journals, reports...)	1) Identifying malfunctions and maintaining electrical machines / prepared by the World Bank For artistic illustrations. 2) Fundamentals and maintenance of transistor circuits / written by Larson.
Electronic References, Websites	

## Course Description Form

<b>1. Course Name:</b>					
Mathematics					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Asma Saleh Mahdi Email: asmaa.jasim.ims@atu.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>Understand key concepts and Knowledge of the rules and laws of mathematics and their application in electrical techniques.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the lecture topic	Matrices / determinants / and their properties	Lecture	Quiz, homework
2	2	Understand the lecture topic	Solving linear equations ( Kramer method )	Lecture	Quiz, homework
3	2	Understand the lecture topic	Vectors	Lecture	Quiz, homework
4	2	Understand the lecture topic	Phase and directional representation of alternating quantities	Lecture	Quiz, homework
5	2	Understand the lecture topic	Orthogonal vector unit	Lecture	Quiz, homework
6	2	Understand the lecture topic	Function/trigonometric functions and trigonometric relationships/logarithmic functions	Lecture	Quiz, homework
7	2	Understand the lecture topic	Calculating the DC current value for a semi-bridge circuit / Calculating the effective value of the line voltage / load of the transistor	Lecture	Quiz, homework
8	2	Understand the lecture topic	Exponential function / Hyperbolic functions / Applications of drawing	Lecture	Quiz, homework

			exponential functions for a first-order electrical circuit, representing an RC filter circuit with an exponential function		
9	2	Understand the lecture topic	Objectives / Objectives of algebraic and trigonometric functions / Applications to objectives	Lecture	Quiz, homework
10	2	Understand the lecture topic	Differentiation/derivative of algebraic functions	Lecture	Quiz, homework
11	2	Understand the lecture topic	Implicit function	Lecture	Quiz, homework
12	2	Understand the lecture topic	Derivative of trigonometric functions	Lecture	Quiz, homework
13	2	Understand the lecture topic	Derivative of exponential functions	Lecture	Quiz, homework
14	2	Understand the lecture topic	Derivative applications	Lecture	Quiz, homework
15	2	Understand the lecture topic	Calculations of the rate of change of voltage and current as a function of time	Lecture	Quiz, homework
16	2	Understand the lecture topic	Increasing and decreasing / maxima and minima / inflection points / drawing functions	Lecture	Quiz, homework
17	2	Understand the lecture topic	Response plot of a second order RLC circuit	Lecture	Quiz, homework
18	2	Understand the lecture topic	General physics and engineering applications	Lecture	Quiz, homework
19	2	Understand the lecture topic	integration	Lecture	Quiz, homework
20	2	Understand the lecture topic	Integration of exponential and trigonometric functions	Lecture	Quiz, homework
21	2	Understand the lecture topic	Definite Integration / Applications of Definite Integration	Lecture	Quiz, homework
22	2	Understand the lecture topic	Rotational volumes / arc length of the curve	Lecture	Quiz, homework
23	2	Understand the lecture topic	Physical and engineering applications (work - torque - momentum - moment of inertia )	Lecture	Quiz, homework
24	2	Understand the lecture topic	General methods of integration include substitution, division, and the use of partial, exponential, and logarithmic fractions	Lecture	Quiz, homework
25	2	Understand the lecture topic	Construct an integrator circuit using resistance and inductance	Lecture	Quiz, homework
26	2	Understand the lecture topic	Numerical methods in integration	Lecture	Quiz, homework
27	2	Understand the lecture topic	Trapezium rule / Simpson's rule	Lecture	Quiz, homework
28	2	Understand the lecture topic	Finding the distance from acceleration and speed / finding the	Lecture	Quiz, homework

			value of the effective current of a rectifier		
29	2	Understand the lecture topic	Solving discrete, homogeneous, and linear differential equations with their various applications within the field of specialization	Lecture	Quiz, homework
30	2	Understand the lecture topic	Complex numbers / addition, subtraction, multiplication and division / geometric representation of complex numbers / the relationship of electrical units to complex numbers	Lecture	Quiz, homework

### 11. Course Evaluation

First semester / 20 marks  
 Second semester/20 marks  
 Activity/10 marks  
 Final exam/50 marks

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	George B. Thomas, Jr., "Thomas 'Calculus" 12 <sup>th</sup> edition, Addison Wesley, Pearson Education, Inc, 2010.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Course Description Form

<b>1. Course Name:</b>					
Computer applications/1					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Ola Najah kazem					
Email: <a href="mailto:ola.najah@atu.edu.iq">ola.najah@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Dealing with the computer and using it in the correct way.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Understand the lecture topic	Introduction to computers and their benefits.	Lecture + Laboratory	Practical application , Exam, Homework
2	1	Understand the lecture topic	Input and output means, software.	Lecture + Laboratory	Practical application , Exam, Homework
3	1	Understand the lecture topic	Operating system WINDOWS7.	Lecture + Laboratory	Practical application , Exam, Homework
4	1	Understand the lecture topic	How to handle mouse actions.	Lecture + Laboratory	Practical application , Exam, Homework
5	1	Understand the lecture topic	The concept of the window and identifying its main components and dealing with icons.	Lecture + Laboratory	Practical application , Exam, Homework
6	1	Understand the lecture topic	Copy files and folders, cut and paste.	Lecture + Laboratory	Practical application , Exam, Homework
7	1	Understand the lecture topic	File, folder and disk properties, change desktop wallpaper.	Lecture + Laboratory	Practical application , Exam, Homework
8	1	Understand the lecture topic	DESKTOP BACKGROUND	Lecture + Laboratory	Practical application , Exam, Homework
9	1	Understand the lecture topic	Change window colors , screen saver	Lecture + Laboratory	Practical application , Exam,

					Homework
10	1	Understand the lecture topic	Get to know the CONTROL PANAL.	Lecture + Laboratory	Practical application , Exam, Homework
11	1	Understand the lecture topic	Get to know some of the accessories.	Lecture + Laboratory	Practical application , Exam, Homework
12	1	Understand the lecture topic	software :	Lecture + Laboratory	Practical application , Exam, Homework
13	1	Understand the lecture topic	Commands : OSNAP , ORTHO , LWT , OTRACK , POLAR , SNAP , GRID , DISTANCE , AREA	Lecture + Laboratory	Practical application , Exam, Homework
14	1	Understand the lecture topic	tools : ZOOM command , PAN command , REGEN command	Lecture + Laboratory	Practical application , Exam, Homework
15	1	Understand the lecture topic	Basic drawing commands DRAW: LINE , MULTILINE , CONSTRUCTION LINE , POLYLINE	Lecture + Laboratory	Practical application , Exam, Homework
16	1	Understand the lecture topic	Basic drawing commands POLYGON , RECTANGLE , ARC , CIRCLE , DONUT , REVLOUD , SPLINE	Lecture + Laboratory	Practical application , Exam, Homework
17	1	Understand the lecture topic	Basic drawing commands ELLIPS , MACKE BLOCK , INSERT BLOCK , MBLOCK , WBLOCK , HATCH , REGION	Lecture + Laboratory	Practical application , Exam, Homework
18	1	Understand the lecture topic	commands : ERASE , COPY , MIRROR , OFFSET , ARRAY , MOVE , ROTATE	Lecture + Laboratory	Practical application , Exam, Homework
19	1	Understand the lecture topic	Modification commands SCALE , CHAMFER , FILLET , STRETCH , TRIM , EXTEND , BREAK , EXPLODE	Lecture + Laboratory	Practical application , Exam, Homework
20	1	Understand the lecture topic	Commands for writing and modifying TEXT : MULTILINE TEXT , SINGLE LINE TEXT	Lecture + Laboratory	Practical application , Exam, Homework
21	1	Understand the lecture topic	How to make new writing style templates, get to know the DESIGN CENTER and benefit from ready-made electrical templates.	Lecture + Laboratory	Practical application , Exam, Homework
22	1	Understand the lecture topic	Division commands: MEASURE , DIVIDE , graphic specifications control : LINETYPE , LINE WEIGHT , COLOR .	Lecture + Laboratory	Practical application , Exam, Homework
23	1	Understand the lecture topic	Modify graphic properties using : PROPERTIES , MATCH PROPERTIES , GRIPS	Lecture + Laboratory	Practical application , Exam, Homework
24	1	Understand the lecture topic	Dimensions DIMENSION	Lecture + Laboratory	Practical application , Exam, Homework
25	1	Understand the lecture topic	Introduction to 3D drawing.	Lecture + Laboratory	Practical application , Exam, Homework
26	1	Understand the lecture topic	Preview the 3D drawing using 3 DVIEW	Lecture + Laboratory	Practical application , Exam, Homework
27	1	Understand the lecture topic	Split screen 3D drawing using VPORTS , UCS user coordinate system	Lecture + Laboratory	Practical application , Exam, Homework
28	1	Understand the	Creating 3D surfaces with 3D SURFACE	Lecture +	Practical application , Exam,

		lecture topic		Laboratory	Homework
29	1	Understand the lecture topic	Review	Lecture + Laboratory	Practical application , Exam, Homework
30	1	Understand the lecture topic	Review	Lecture + Laboratory	Practical application , Exam, Homework

### **11.Course Evaluation**

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### **12.Learning and Teaching Resources**

Required textbooks (curricular books, if any)	
Main references (sources)	Computer basics and office applications book.
Recommended books and references (scientific journals, reports...)	Windows 7 book.
Electronic References, Websites	AutoCAD 2014 basics book.

## Course Description Form

<b>1. Course Name:</b>					
Engineering and electrical drawing					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First +Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
90 hours / 6 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: mohanad mosa mohammed					
Email: <a href="mailto:mohanad.hamza@atu.edu.iq">mohanad.hamza@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Dealing with the computer and using it in the correct way.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understand the lecture topic	The importance of engineering drawing.	Laboratory	Practical application
2	3	Understand the lecture topic	Recognizing the interfaces of AutoCAD.	Laboratory	Practical application
3	3	Understand the lecture topic	Ways to execute AutoCAD commands and ways to exit them.	Laboratory	Practical application
4	3	Understand the lecture topic	Navigate between interfaces, show menus, show and hide bars.	Laboratory	Practical application
5	3	Understand the lecture topic	Methods of drawing a straight line using the Cartesian coordinate method, the relative method and the polar method.	Laboratory	Practical application
6	3	Understand the lecture topic	Display commands, dimensions of the working environment, drawing boundaries and units, save the file and then it can be opened in a previous version of the program using the following commands :	Laboratory	Practical application
7	3	Understand the lecture topic	(Zoom, drawing Limits, Units, Options)	Laboratory	Practical application
8	3	Understand the lecture topic	Drawing accuracy orders	Laboratory	Practical application

9	3	Understand the lecture topic	SNAP, GRID, ORTHO, POLAR, OSNAP, OTRACK, DUCS, DYN, LWT))	Laboratory	Practical application
10	3	Understand the lecture topic	Drawing isometric objects using the GRID command	Laboratory	Practical application
11	3	Understand the lecture topic	Orders for drawing the banners	Laboratory	Practical application
12	3	Understand the lecture topic	(Rectangle, Circle, Polygon, Arc, Ellipse, Donut, Wipeout, Revision Cloud)	Laboratory	Practical application
13	3	Understand the lecture topic	Modification orders	Laboratory	Practical application
14	3	Understand the lecture topic	(Erase, Copy, Move, Mirror, Offset, Scale, Stretch, Rotate)	Laboratory	Practical application
15	3	Understand the lecture topic	Setting different dimensions on drawing elements and controlling them using the Dimensions Style dialog box	Laboratory	Practical application
16	3	Understand the lecture topic	Linear, Aligned, Arc Length, Radius, Diameter, Angular, Baseline, Continue, - Mleader , Dimension Style...	Laboratory	Practical application
17	3	Understand the lecture topic	Control drawing specifications (types of lines, colors of elements, their properties, and transferring properties to another element (Match Properties))	Laboratory	Practical application
18	3	Understand the lecture topic	Drawing orders for other major elements	Laboratory	Practical application
19	3	Understand the lecture topic	(Polyline, Point, Spline, Helix, Table)	Laboratory	Practical application
20	3	Understand the lecture topic	Other modification orders	Laboratory	Practical application
21	3	Understand the lecture topic	(Array, Trim, Extend, Break, Fillet, Chamfer, Explode, Align )	Laboratory	Practical application
22	3	Understand the lecture topic	Adding Single Line & Multiline Text, methods, and controlling their specifications.	Laboratory	Practical application
23	3	Understand the lecture topic	account Spaces And the sizes The lengths and coordinates of points and item specifications Using the Inquiry command	Laboratory	Practical application
24	3	Understand the lecture topic	Handling bar orders Parametric	Laboratory	Practical application
25	3	Understand the lecture topic	Flickering and shading (Hatch, Gradient) And sectors	Laboratory	Practical application
26	3	Understand the lecture topic	Layers (Layers) and control their settings.	Laboratory	Practical application
27	3	Understand the lecture topic	Blocks, their types, inclusions, and control of their specifications.	Laboratory	Practical application
28	3	Understand the	Convert drawing from 2D to 3D	Laboratory	Practical

		lecture topic	commands		application
29	3	Understand the lecture topic	(Region, Boundary, Join)	Laboratory	Practical application
30	3	Understand the lecture topic	Surfaces and objects	Laboratory	Practical application

### 11.Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### 12.Learning and Teaching Resources

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

## Course Description Form

<b>1. Course Name:</b>					
Human rights and democracy					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Mohammed Ghazi Abdul Hussein					
Email: mohammed.husseini.ims01@atu.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>Understanding the rights of the student and the citizen, the duties assigned to him, and the definition of democracy.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Understand the lecture topic	Human rights definition and goals	Lecture	Discussion
2	1	Understand the lecture topic	The roots of human rights and their development in history	Lecture	Discussion
3	1	Understand the lecture topic	Characteristics of human rights	Lecture	Discussion
4	1	Understand the lecture topic	Human rights in heavenly laws	Lecture	Discussion
5	1	Understand the lecture topic	Human rights in the Middle Ages	Lecture	Discussion
6	1	Understand the lecture topic	Human rights in contemporary and modern history	Lecture	Discussion
7	1	Understand the lecture topic	Recognition of human rights	Lecture	Discussion
8	1	Understand the lecture topic	Essential human rights	Lecture	Discussion
9	1	Understand the lecture topic	Types of human rights	Lecture	Discussion
10	1	Understand the lecture topic	Human rights resources	Lecture	Discussion
11	1	Understand the lecture topic	Human rights in Iraqi constitutions	Lecture	Discussion

12	1	Understand the lecture topic	Personal freedoms	Lecture	Discussion
13	1	Understand the lecture topic	The basis of personal freedoms	Lecture	Discussion
14	1	Understand the lecture topic	The general theory of freedoms	Lecture	Discussion
15	1	Understand the lecture topic	The basis of the idea of public freedoms	Lecture	Discussion
16	1	Understand the lecture topic	The basis of the idea of personal freedoms	Lecture	Discussion
17	1	Understand the lecture topic	Guarantees of respect for human rights	Lecture	Discussion
18	1	Understand the lecture topic	What is democracy?	Lecture	Discussion
19	1	Understand the lecture topic	Historical development of democracy	Lecture	Discussion
20	1	Understand the lecture topic	The importance of democracy	Lecture	Discussion
21	1	Understand the lecture topic	Characteristics of democracy	Lecture	Discussion
22	1	Understand the lecture topic	Forms of democracy	Lecture	Discussion
23	1	Understand the lecture topic	Political rights	Lecture	Discussion
24	1	Understand the lecture topic	The basis of political rights	Lecture	Discussion
25	1	Understand the lecture topic	Sources of political rights	Lecture	Discussion
26	1	Understand the lecture topic	Types of political rights	Lecture	Discussion
27	1	Understand the lecture topic	The concept of crimes and their types	Lecture	Discussion
28	1	Understand the lecture topic	Psychological and social crimes and their effects	Lecture	Discussion
29	1	Understand the lecture topic	Environmental crimes of the Baath regime in Iraq	Lecture	Discussion
30	1	Understand the lecture topic	Mass grave crimes	Lecture	Discussion

### 11. Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Recommended books and references (scientific journals, reports...)

Electronic References, Websites

## Course Description Form

<b>1. Course Name:</b>					
Occupational safety					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First /First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Hussein Khalil Obaid					
Email: <a href="mailto:Hussein.Khalil.ims@atu.edu.iq">Hussein.Khalil.ims@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• The occurrence of accidents at work.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the lecture topic	Causes of electric current injury	Lecture	Discussion
2	2	Understand the lecture topic	Types of electrical injuries	Lecture	Discussion
3	2	Understand the lecture topic	Relief for someone injured by electrical current - extricating the injured person	Lecture	Discussion
4	2	Understand the lecture topic	Artificial respiration - treatment of burns	Lecture	Discussion
5	2	Understand the lecture topic	Monthly exam	Lecture	Discussion
6	2	Understand the lecture topic	Effects resulting from the passage of electric current to the ground	Lecture	Discussion
7	2	Understand the lecture topic	Fire alarm systems - control unit	Lecture	Discussion
8	2	Understand the lecture topic	Fire detectors - heat detectors - smoke detectors	Lecture	Discussion
9	2	Understand the lecture topic	Buildings that must be provided with a fire alarm system	Lecture	Discussion
10	2	Understand the lecture topic	Monthly exam	Lecture	Discussion
11	2	Understand the lecture topic	Means of alarm, including bells and horns	Lecture	Discussion

12	2	Understand the lecture topic	Guidance on occupational health and safety	Lecture	Discussion
13	2	Understand the lecture topic	Reducing unsafe behavior and practices	Lecture	Discussion
14	2	Understand the lecture topic	Personal protective equipment - vision protection - hearing protection	Lecture	Discussion
15	2	Understand the lecture topic	Personal protective clothing	Lecture	Discussion

### 11. Course Evaluation

First semester / 50 marks

Final exam/50 marks

### 12. Learning and Teaching Resources

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

## Course Description Form

<b>1. Course Name:</b>					
English language/1					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Afrah Muhammad Muslim					
Email: <a href="mailto:afrah.al-sowaidi.ims@atu.edu.iq">afrah.al-sowaidi.ims@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Learn the basics of the English language.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	1	Understand the lecture topic	the introduction	Lecture	Quiz
2.	1	Understand the lecture topic	auxiliary verbs	Lecture	Quiz
3.	1	Understand the lecture topic	What is your name	Lecture	Quiz
4.	1	Understand the lecture topic	How are you?1	Lecture	Quiz
5.	1	Understand the lecture topic	How are you?2	Lecture	Quiz
6.	1	Understand the lecture topic	Verbs 1	Lecture	Quiz
7.	1	Understand the lecture topic	Actions 2	Lecture	Quiz
8.	1	Understand the lecture topic	Questions 1	Lecture	Quiz
9.	1	Understand the lecture topic	Questions 2	Lecture	Quiz
10.	1	Understand the lecture topic	Negation 1	Lecture	Quiz
11.	1	Understand the lecture topic	Negation 2	Lecture	Quiz
12.	1	Understand the lecture topic	Attributes 1	Lecture	Quiz
13.	1	Understand the lecture topic	Attributes 2	Lecture	Quiz
14.	1	Understand the lecture topic	The one who explains the unknown 1	Lecture	Quiz
15.	1	Understand the lecture topic	Passive voice 2	Lecture	Quiz
16.	1	Understand the lecture topic	The present tense	Lecture	Quiz
17.	1	Understand the lecture topic	Actions	Lecture	Quiz
18.	1	Understand the lecture topic	Time 1	Lecture	Quiz
19.	1	Understand the lecture topic	Time 2	Lecture	Quiz
20.	1	Understand the lecture topic	Verbs in the present tense	Lecture	Quiz

21.	1	Understand the lecture topic	Questions and denials 1	Lecture	Quiz
22.	1	Understand the lecture topic	Questions and denials 2	Lecture	Quiz
23.	1	Understand the lecture topic	adjectives	Lecture	Quiz
24.	1	Understand the lecture topic	The names of the signal	Lecture	Quiz
25.	1	Understand the lecture topic	Questions and answers	Lecture	Quiz
26.	1	Understand the lecture topic	Prepositions 1	Lecture	Quiz
27.	1	Understand the lecture topic	Prepositions 2	Lecture	Quiz
28.	1	Understand the lecture topic	Simple past1	Lecture	Quiz
29.	1	Understand the lecture topic	Simple past2	Lecture	Quiz
30.	1	Understand the lecture topic	Question and negation in simple past tense	Lecture	Quiz

### 11. Course Evaluation

First semester / 20 marks  
 Second semester/20 marks  
 Activity/10 marks  
 Final exam/50 marks

### 12. Learning and Teaching Resources

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

## Course Description Form

<b>1. Course Name:</b>					
Digital electronics					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly ( theoretical + practical )					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours / 4 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Malek Ghazi Kazem					
Email: <a href="mailto:malik.kadhim.ims@atu.edu.iq">malik.kadhim.ims@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>Introducing the student to digital electronic circuits and how they work and connect them.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lecture and laboratory using modern methods.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the lecture topic	Number Systems	Lecture	Discussion
2	2	Understand the lecture topic	Binary Codes	Lecture	Discussion
3	2	Understand the lecture topic	Digital Arithmetic	Lecture	Discussion
4	2	Understand the lecture topic	Logic Gates and Related Devices	Lecture	Discussion
5	2	Understand the lecture topic	Logic Families	Lecture	Discussion
6	2	Understand the lecture topic	Boolean Algebra and Simplification Techniques	Lecture	Discussion
7	2	Understand the lecture topic	Arithmetic Circuits	Lecture	Discussion
8	2	Understand the lecture topic	Multiplexers and Demultiplexers	Lecture	Discussion
9	2	Understand the lecture topic	Programmable Logic Devices	Lecture	Discussion
10	2	Understand the lecture topic	Flip-Flops and Related Devices	Lecture	Discussion
11	2	Understand the	JK Flip-Flop as D Flip-Flop	Lecture	Discussion

		lecture topic			
12	2	Understand the lecture topic	Counters and Registers	Lecture	Discussion
13	2	Understand the lecture topic	Counters and Registers	Lecture	Discussion
14	2	Understand the lecture topic	Data Conversion Circuits – D/A and A/D Converters	Lecture	Discussion
15	2	Understand the lecture topic	Data Conversion Circuits – D/A and A/D Converters	Lecture	Discussion

### 11. Course Evaluation

Second semester / 50 marks

Final exam/50 marks

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Study lectures.
Main references (sources)	References related to the subject and available in the institute's library.
Recommended books and references (scientific journals, reports...)	Scientific books and journals related to the subject of digital electronics.
Electronic References, Websites	Basics, instructions, applications.

## Course Description Form

<b>13. Course Name:</b>					
Arabic language/1					
<b>14. Course Code:</b>					
<b>15. Semester / Year:</b>					
First + Second/First					
<b>16. Description Preparation Date:</b>					
22 /12/2024					
<b>17. Available Attendance Forms:</b>					
Weekly (theoretical)					
<b>18. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>19. Course administrator's name (mention all, if more than one name)</b>					
Name: Fadela Ismail					
Email: fadhela.ismail.ims@atu.edu.iq					
<b>20. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Learn the basics of the Arabic language.</li> </ul>			
<b>21. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods.			
<b>22. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Understand the lecture topic	Grammar and linguistic errors	Lecture	Quiz
2	1	Understand the lecture topic	The effect of dictation on the corruption of meaning	Lecture	Quiz
3	1	Understand the lecture topic	Writing a thousand	Lecture	Quiz
4	1	Understand the lecture topic	The difference between the extended alif and the alif The cabin	Lecture	Quiz
5	1	Understand the lecture topic	Writing the long ta' and the bound ta'	Lecture	Quiz
6	1	Understand the lecture topic	Spelling errors are common	Lecture	Quiz
7	1	Understand the lecture topic	Solar and lunar letters	Lecture	Quiz
8	1	Understand the lecture topic	Dhaad, Dhaa and moral differences	Lecture	Quiz
9	1	Understand the lecture topic	Writing the hamza	Lecture	Quiz
10	1	Understand the lecture topic	punctuation marks	Lecture	Quiz
11	1	Understand the lecture topic	Sections of speech	Lecture	Quiz
12	1	Understand the lecture topic	Noun signs and verb signs	Lecture	Quiz
13	1	Understand the lecture topic	Effects and their types	Lecture	Quiz

14	1	Understand the lecture topic	Number and number	Lecture	Quiz
15	1	Understand the lecture topic	Issue sections	Lecture	Quiz
16	1	Understand the lecture topic	Applications of common linguistic errors	Lecture	Quiz
17	1	Understand the lecture topic	Nun and Tanween	Lecture	Quiz
18	1	Understand the lecture topic	Meanings of prepositions	Lecture	Quiz
19	1	Understand the lecture topic	Using some letters in the wrong place	Lecture	Quiz
20	1	Understand the lecture topic	The language of discourse	Lecture	Quiz
21	1	Understand the lecture topic	Administrative discourse	Lecture	Quiz
22	1	Understand the lecture topic	Formal aspects of administrative discourse	Lecture	Quiz
23	1	Understand the lecture topic	Understanding the language of administrative discourse	Lecture	Quiz
24	1	Understand the lecture topic	Examples of administrative correspondence	Lecture	Quiz
25	1	Understand the lecture topic	Linguistic corrections	Lecture	Quiz
26	1	Understand the lecture topic	Common linguistic errors	Lecture	Quiz
27	1	Understand the lecture topic	Characteristics of the Arabic language	Lecture	Quiz
28	1	Understand the lecture topic	General models	Lecture	Quiz
29	1	Understand the lecture topic	General review	Lecture	Quiz
30	1	Understand the lecture topic	Applications	Lecture	Quiz

### 23. Course Evaluation

First semester / 20 marks  
 Second semester/20 marks  
 Activity/10 marks  
 Final exam/50 marks

### 24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	The unique dictation of Naoum Girgis and Abbas's book of comprehensive grammar Good
Electronic References, Websites	

## 2<sup>ND</sup> STAGE

### Course Description Form

<b>1. Course Name:</b>					
Electrical machines					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
150 hours / 10 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Malik Ghazi Kazem Email: malik.kadhim.ims@atu.edu.iq					
<b>8. Course Objectives</b>					
Course Objectives		<ul style="list-style-type: none"> <li>Introducing the student to the parts and operation of electrical machines.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
Strategy		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Understand the lecture topic	Magnetic circuits.	Lecture + Laboratory	Practical application , Exam, Homework
2	5	Understand the lecture topic	Basic principles of direct current machines.	Lecture + Laboratory	Practical application , Exam, Homework
3	5	Understand the lecture topic	Types of DC machines with separate feeding.	Lecture + Laboratory	Practical application , Exam, Homework
4	5	Understand the lecture topic	Electromotive force.	Lecture + Laboratory	Practical application , Exam, Homework
5	5	Understand the lecture topic	Study of the magnetization curve.	Lecture + Laboratory	Practical application , Exam, Homework
6	5	Understand the lecture topic	Study the load characteristics of all types of direct current machines.	Lecture + Laboratory	Practical application , Exam, Homework
7	5	Understand the lecture topic	DC motors.	Lecture + Laboratory	Practical application , Exam, Homework
8	5	Understand the lecture topic	Torque - torque on the product - torque on the drive shaft.	Lecture + Laboratory	Practical application , Exam, Homework
9	5	Understand the	General characteristics of	Lecture +	Practical application ,

		lecture topic	speed and torque of motors (parallel - series - combined)	Laboratory	Exam, Homework
10	5	Understand the lecture topic	Controlling the speed of direct current machines.	Lecture + Laboratory	Practical application , Exam, Homework
11	5	Understand the lecture topic	Engine testing.	Lecture + Laboratory	Practical application , Exam, Homework
12	5	Understand the lecture topic	Electrical transformers.	Lecture + Laboratory	Practical application , Exam, Homework
13	5	Understand the lecture topic	Open circuit and short circuit test.	Lecture + Laboratory	Practical application , Exam, Homework
14	5	Understand the lecture topic	Autotransformer - current transformer - voltage transformer.	Lecture + Laboratory	Practical application , Exam, Homework
15	5	Understand the lecture topic	Three-phase transformers.	Lecture + Laboratory	Practical application , Exam, Homework
16	5	Understand the lecture topic	Three-phase induction motors.	Lecture + Laboratory	Practical application , Exam, Homework
17	5	Understand the lecture topic	Types of engines.	Lecture + Laboratory	Practical application , Exam, Homework
18	5	Understand the lecture topic	Methods for controlling the start of induction motors.	Lecture + Laboratory	Practical application , Exam, Homework
19	5	Understand the lecture topic	The relationship between torque and power factor.	Lecture + Laboratory	Practical application , Exam, Homework
20	5	Understand the lecture topic	Reversing the direction of rotation of three-phase induction motors.	Lecture + Laboratory	Practical application , Exam, Homework
21	5	Understand the lecture topic	Single-phase induction motors.	Lecture + Laboratory	Practical application , Exam, Homework
22	5	Understand the lecture topic	Synchronous generators.	Lecture + Laboratory	Practical application , Exam, Homework
23	5	Understand the lecture topic	Comparison of DC generators.	Lecture + Laboratory	Practical application , Exam, Homework
24	5	Understand the lecture topic	Synchronous motors.	Lecture + Laboratory	Practical application , Exam, Homework
25	5	Understand the lecture topic	Practical uses.	Lecture + Laboratory	Practical application , Exam, Homework
26	5	Understand the lecture topic	General motor.	Lecture + Laboratory	Practical application , Exam, Homework
27	5	Understand the lecture topic	Control motors.	Lecture + Laboratory	Practical application , Exam, Homework
28	5	Understand the lecture topic	Stepper motors.	Lecture + Laboratory	Practical application , Exam, Homework
29	5	Understand the lecture topic	Taco generators.	Lecture + Laboratory	Practical application , Exam, Homework
30	5	Understand the lecture topic	Linear actuators.	Lecture + Laboratory	Practical application , Exam, Homework

### 11.Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### **12.Learning and Teaching Resources**

Required textbooks (curricular books, if any)	Electrical machines / Dr . Muhammad Zaki Muhammad Khadr/University Mosul.
Main references (sources)	Electrical machine direct and alternating current/ Siskind.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Websites on the Internet related to electrical engineering.

## Course Description Form

<b>1. Course Name:</b>					
Electrical networks					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
120 hours / 8 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Thamer Ahmed Abdullah Email: thamer.abdullah@atu.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>Preparing the student to study the various calculations in electrical networks.</li> <li>Identify the various measurements to study these calculations.</li> <li>Introducing the student to the stages of generating, transmitting, and distributing electrical energy to consumers.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	4	Understand the lecture topic	How to generate electrical energy.	Lecture + Laboratory	Practical application , Exam, Homework
2	4	Understand the lecture topic	Energy development, electrical power system in generation and even consumption, standard voltages.	Lecture + Laboratory	Practical application , Exam, Homework
3	4	Understand the lecture topic	Thermal power plants.	Lecture + Laboratory	Practical application , Exam, Homework
4	4	Understand the lecture topic	Gas generating stations.	Lecture + Laboratory	Practical application , Exam, Homework
5	4	Understand the lecture topic	Public pole system and diagrams for transformer stations inside and outside buildings	Lecture + Laboratory	Practical application , Exam, Homework
6	4	Understand the	Overhead lines.	Lecture +	Practical application ,

		lecture topic		Laboratory	Exam, Homework
7	4	Understand the lecture topic	Overhead lines - Mechanical calculations.	Lecture + Laboratory	Practical application , Exam, Homework
8	4	Understand the lecture topic	H Sabat The basic elements of overhead lines	Lecture + Laboratory	Practical application , Exam, Homework
9	4	Understand the lecture topic	Solve various problems.	Lecture + Laboratory	Practical application , Exam, Homework
10	4	Understand the lecture topic	Solving short lines includes representing them as an electrical circuit and calculating its efficiency	Lecture + Laboratory	Practical application , Exam, Homework
11	4	Understand the lecture topic	Overhead transmission line insulators	Lecture + Laboratory	Practical application , Exam, Homework
12	4	Understand the lecture topic	Floor midwives.	Lecture + Laboratory	Practical application , Exam, Homework
13	4	Understand the lecture topic	Calculating capacitance and inductance for single and three-pole grounded cables.	Lecture + Laboratory	Practical application , Exam, Homework
14	4	Understand the lecture topic	Voltage gradient in cables.	Lecture + Laboratory	Practical application , Exam, Homework
15	4	Understand the lecture topic	High voltage cables.	Lecture + Laboratory	Practical application , Exam, Homework
16	4	Understand the lecture topic	Distribution networks and direct current distributors that are fed by a power supply.	Lecture + Laboratory	Practical application , Exam, Homework
17	4	Understand the lecture topic	Ring distributors of all kinds.	Lecture + Laboratory	Practical application , Exam, Homework
18	4	Understand the lecture topic	Solve various examples.	Lecture + Laboratory	Practical application , Exam, Homework
19	4	Understand the lecture topic	Conditions for the stability of the operation of synchronous generators with the network.	Lecture + Laboratory	Practical application , Exam, Homework
20	4	Understand the lecture topic	Ways to improve power factor.	Lecture + Laboratory	Practical application , Exam, Homework
21	4	Understand the lecture topic	Types of faults in electrical networks.	Lecture + Laboratory	Practical application , Exam, Homework
22	4	Understand the lecture topic	Principles of protection: their definition and various systems.	Lecture + Laboratory	Practical application , Exam, Homework
23	4	Understand the lecture topic	Follow-ups: divided according to the theory of their work.	Lecture + Laboratory	Practical application , Exam, Homework
24	4	Understand the lecture topic	How to protect overhead transmission lines.	Lecture + Laboratory	Practical application , Exam, Homework
25	4	Understand the lecture topic	How to protect power transformers using Differential Protection	Lecture + Laboratory	Practical application , Exam, Homework
26	4	Understand the lecture topic	How to protect synchronous generators using: Differential Protection	Lecture + Laboratory	Practical application , Exam, Homework
27	4	Understand the lecture topic	Stator protection when current increases , and rotor protection	Lecture + Laboratory	Practical application , Exam, Homework

28	4	Understand the lecture topic	Percentage Reactance	Lecture + Laboratory	Practical application , Exam, Homework
29	4	Understand the lecture topic	Power circuit diagram at the receiving side	Lecture + Laboratory	Practical application , Exam, Homework
30	4	Understand the lecture topic	Economic operation of electrical generating stations	Lecture + Laboratory	Practical application , Exam, Homework

### 11.Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electrical networks laboratory book and binder.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Websites on the Internet related to electrical networks.

## Course Description Form

<b>1. Course Name:</b>					
Power Electronics					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
150 hours / 10 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Malik Ghazi Kazem					
Email: <a href="mailto:malik.kadhim.ims@atu.edu.iq">malik.kadhim.ims@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>Enabling the student to use electronic elements.</li> <li>Building control circuits and electrical power circuits through electronic elements.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Understand the lecture topic	An introduction to learning about electronic elements	Lecture + Laboratory	Practical application , Exam, Homework
2	5	Understand the lecture topic	Uncontrolled three-phase rectifier	Lecture + Laboratory	Practical application , Exam, Homework
3	5	Understand the lecture topic	Use a transistor for a switch	Lecture + Laboratory	Practical application , Exam, Homework
4	5	Understand the lecture topic	Improving the operation of the transistor in switching off and on	Lecture + Laboratory	Practical application , Exam, Homework
5	5	Understand the lecture topic	Principle of operation and installation of a double-junction transistor	Lecture + Laboratory	Practical application , Exam, Homework
6	5	Understand the lecture	Description of operational amplifier	Lecture + Laboratory	Practical application , Exam,

		topic			Homework
7	5	Understand the lecture topic	Using an op-amp as an oscillator	Lecture + Laboratory	Practical application , Exam, Homework
8	5	Understand the lecture topic	Description of the light-emitting diode, phototransistor, and photo coupler	Lecture + Laboratory	Practical application , Exam, Homework
9	5	Understand the lecture topic	Explain the characteristics and structure of thyristors	Lecture + Laboratory	Practical application , Exam, Homework
10	5	Understand the lecture topic	Learn how to connect a thyristor	Lecture + Laboratory	Practical application , Exam, Homework
11	5	Understand the lecture topic	Describe the properties, operation and composition of dayak and triak and their applications	Lecture + Laboratory	Practical application , Exam, Homework
12	5	Understand the lecture topic	Learn to use thyrosteres in direct and alternating electrical circuits	Lecture + Laboratory	Practical application , Exam, Homework
13	5	Understand the lecture topic	Learn the types of oscillators, such as slack, stable, zero detector, and timers	Lecture + Laboratory	Practical application , Exam, Homework
14	5	Understand the lecture topic	General applications of thyristors in all types of circuits and inverters	Lecture + Laboratory	Practical application , Exam, Homework
15	5	Understand the lecture topic	Learn the full and semi-controlled rectifiers of inductive and resistive circuits and their outputs	Lecture + Laboratory	Practical application , Exam, Homework
16	5	Understand the lecture topic	Learn applications and give examples of components	Lecture + Laboratory	Practical application , Exam, Homework
17	5	Understand the lecture topic	Learn about three-phase reflectors, their outputs, and their mathematical proof	Lecture + Laboratory	Practical application , Exam, Homework
18	5	Understand the lecture topic	Learn to protect thyristors from sudden changes in voltages and currents	Lecture + Laboratory	Practical application , Exam, Homework
19	5	Understand the lecture topic	Learn about the inverter from direct power - direct power and ways to force the thyristor to turn off	Lecture + Laboratory	Practical application , Exam, Homework
20	5	Understand the lecture topic	Connecting single and triple inverters in parallel and series	Lecture + Laboratory	Practical application , Exam, Homework
21	5	Understand the lecture topic	Identify the applications of inverters as emergency sources and their use to control the speed of engines	Lecture + Laboratory	Practical application , Exam, Homework
22	5	Understand the lecture topic	Learn to control the speed of a motor by changing frequency and voltage	Lecture + Laboratory	Practical application , Exam, Homework
23	5	Understand the lecture	Learn about DC-DC clip and inverter	Lecture + Laboratory	Practical application , Exam,

		topic			Homework
24	5	Understand the lecture topic	Identify the types of sections and control the speed of a DC motor	Lecture + Laboratory	Practical application , Exam, Homework
25	5	Understand the lecture topic	Learn about single- and three-phase voltage regulators and AC-AC inverters	Lecture + Laboratory	Practical application , Exam, Homework
26	5	Understand the lecture topic	Learn about general applications of induction motors	Lecture + Laboratory	Practical application , Exam, Homework
27	5	Understand the lecture topic	Rotating inverters, DC-DC and AC-AC, are of two types	Lecture + Laboratory	Practical application , Exam, Homework
28	5	Understand the lecture topic	AC-AC periodic inverter	Lecture + Laboratory	Practical application , Exam, Homework
29	5	Understand the lecture topic	Use wave toning to control speed	Lecture + Laboratory	Practical application , Exam, Homework
30	5	Understand the lecture topic	Recognize the use of a polar transistor to control the speed of an AC motor	Lecture + Laboratory	Practical application , Exam, Homework

### 11.Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Methodical book.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Specialized and methodological books, visual media, specialized magazines, and reports.
Electronic References, Websites	Websites on the Internet related to Power Electronics.

## Course Description Form

<b>1. Course Name:</b>					
Maintenance laboratories workshop					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (Practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
120 hours / 8 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: mohanad mosa mohammed					
Email: <a href="mailto:mohanad.hamza@atu.edu.iq">mohanad.hamza@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>The student learns to disassemble and assemble electrical machine parts.</li> <li>The student learns to inspect electrical machines after winding them.</li> <li>The student learns to distinguish between electrical machines and choose between them.</li> </ul>				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	Laboratories.				
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	4	Understand the lecture topic	Installation of direct current machines.	Laboratory	Practical application
2	4	Understand the lecture topic	How to clean the surface of the units.	Laboratory	Practical application
3	4	Understand the lecture topic	Contact, disconnection and insulation testing.	Laboratory	Practical application
4	4	Understand the lecture topic	Armature windings of a DC generator.	Laboratory	Practical application
5	4	Understand the lecture topic	Insulation with varnish - drying - connecting the final ends.	Laboratory	Practical application
6	4	Understand the lecture topic	Domain files.	Laboratory	Practical application
7	4	Understand the lecture topic	Making files and installing monopoles.	Laboratory	Practical application
8	4	Understand the lecture topic	Connecting and connecting the ends.	Laboratory	Practical application

9	4	Understand the lecture topic	Study of three-phase transformers.	Laboratory	Practical application
10	4	Understand the lecture topic	Preparing, cutting and assembling iron core sheets.	Laboratory	Practical application
11	4	Understand the lecture topic	Polarity test.	Laboratory	Practical application
12	4	Understand the lecture topic	Deductive (inductive) motors.	Laboratory	Practical application
13	4	Understand the lecture topic	Winding and connecting the ends of the coils and testing continuity	Laboratory	Practical application
14	4	Understand the lecture topic	Choosing nodes in the coils - choosing insulation and measuring it - choosing the engine's ground leakage	Laboratory	Practical application
15	4	Understand the lecture topic	Assembling the motor and testing the motor at the load assigned to it - studying the starting phase of three-phase motors - the direct method - the self-motor method	Laboratory	Practical application
16	4	Understand the lecture topic	Induction motor protection devices and use of timers	Laboratory	Practical application
17	4	Understand the lecture topic	Change the final drive connection to the ends from a star to a triangle	Laboratory	Practical application
18	4	Understand the lecture topic	The motor is originally running Y - $\square$ and note the differences in current and torque in the two cases	Laboratory	Practical application
19	4	Understand the lecture topic	Single-phase induction motor, practical study of different types of single-phase induction motors - installation of motors - capacitor motor - split-phase motor	Laboratory	Practical application
20	4	Understand the lecture topic	Winding a split-phase motor and conducting the necessary tests on it and methods of periodic maintenance for it - faults and methods of treating them - reversing the direction of rotation of the motor	Laboratory	Practical application
21	4	Understand the lecture topic	Drawing windings for a split-phase motor - multiple examples	Laboratory	Practical application
22	4	Understand the lecture topic	Different types of shaded pole motor winding	Laboratory	Practical application
23	4	Understand the lecture topic	Continuity test - polarity test - ground contact test - short circuit test	Laboratory	Practical application
24	4	Understand the lecture topic	Electrical and mechanical faults and methods of treating them	Laboratory	Practical application
25	4	Understand the lecture topic	Winding the motor with a capacitor, conducting the necessary tests on it - polar continuity test - ground contact - short circuit between the coils	Laboratory	Practical application
26	4	Understand the lecture topic	Wind the ceiling and table fan motor and conduct the necessary tests	Laboratory	Practical application
27	4	Understand the lecture topic	Maintenance of home appliances - home refrigerator - mechanical and electrical faults and methods of treating them	Laboratory	Practical application
28	4	Understand the lecture topic	Home appliance maintenance - home freezer - home air conditioner - mechanical and electrical faults and methods of treating them - periodic maintenance	Laboratory	Practical application
29	4	Understand the	Maintenance of home appliances - electric washing machine - electrical faults and	Laboratory	Practical application

		lecture topic	methods of treating them - periodic maintenance		
30	4	Understand the lecture topic	Installing direct current machines - methods for rewinding direct current machines - detailed drawing	Laboratory	Practical application

### 11. Course Evaluation

1<sup>st</sup> Semester/ Evaluation  
2<sup>nd</sup> Semester/ Evaluation

### 12. Learning and Teaching Resources

Required textbooks (curricular books, any)	Electrical maintenance laboratory vise.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Websites on the Internet related to electrical networks.

## Course Description Form

<b>1. Course Name:</b>					
Electrical installations 2					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
120 hours / 8 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Yasser Abd Nour Jabbar Email: yasser.jebbar.ims@atu.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Identify electrical materials.</li> <li>• Identify the wiring systems used in laboratories and homes.</li> <li>• Learn about the method of establishing and installing electrical machines and methods of controlling and protecting the various loads during the installation</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand the lecture topic	Cables	Lecture + Laboratory	Practical application , Exam, Homework
2	4	Understand the lecture topic	Methods of extending midwives	Lecture + Laboratory	Practical application , Exam, Homework
3	4	Understand the lecture topic	Protection of electric motors	Lecture + Laboratory	Practical application , Exam, Homework
4	4	Understand the lecture topic	Protection against over currents	Lecture + Laboratory	Practical application , Exam, Homework
5	4	Understand the lecture topic	Protection against the disappearance or fall of one of the phases	Lecture + Laboratory	Practical application , Exam, Homework
6	4	Understand the lecture topic	Circuit breakers	Lecture + Laboratory	Practical application , Exam, Homework
7	4	Understand the lecture topic	Substations	Lecture + Laboratory	Practical application , Exam, Homework
8	4	Understand the lecture topic	Lighting	Lecture + Laboratory	Practical application , Exam, Homework
9	4	Understand the	Solved questions about how to design	Lecture +	Practical application

		lecture topic	and calculate lighting	Laboratory	, Exam, Homework
10	4	Understand the lecture topic	Grounded system and insulated system	Lecture + Laboratory	Practical application , Exam, Homework
11	4	Understand the lecture topic	Voltage drop in the feeders	Lecture + Laboratory	Practical application , Exam, Homework
12	4	Understand the lecture topic	Solved questions on voltage drop calculations	Lecture + Laboratory	Practical application , Exam, Homework
13	4	Understand the lecture topic	Technical methods of massage	Lecture + Laboratory	Practical application , Exam, Homework
14	4	Understand the lecture topic	Establishing dangerous places	Lecture + Laboratory	Practical application , Exam, Homework
15	4	Understand the lecture topic	Grounding	Lecture + Laboratory	Practical application , Exam, Homework
16	4	Understand the lecture topic	Definition of electrical energy expenditure	Lecture + Laboratory	Practical application , Exam, Homework
17	4	Understand the lecture topic	Energy meters	Lecture + Laboratory	Practical application , Exam, Homework
18	4	Understand the lecture topic	Power Factor	Lecture + Laboratory	Practical application , Exam, Homework
19	4	Understand the lecture topic	Electric heating	Lecture + Laboratory	Practical application , Exam, Homework
20	4	Understand the lecture topic	Solved examples of heating calculations	Lecture + Laboratory	Practical application , Exam, Homework
21	4	Understand the lecture topic	Electric elevators	Lecture + Laboratory	Practical application , Exam, Homework
22	4	Understand the lecture topic	Types of elevators	Lecture + Laboratory	Practical application , Exam, Homework
23	4	Understand the lecture topic	Traction engine construction and reduction ratio.	Lecture + Laboratory	Practical application , Exam, Homework
24	4	Understand the lecture topic	Stop kit, signaling system (elevators)	Lecture + Laboratory	Practical application , Exam, Homework
25	4	Understand the lecture topic	Types of motors used in elevators	Lecture + Laboratory	Practical application , Exam, Homework
26	4	Understand the lecture topic	Security precautions and frictional arrest of elevator sliding	Lecture + Laboratory	Practical application , Exam, Homework
27	4	Understand the lecture topic	Lightning rods	Lecture + Laboratory	Practical application , Exam, Homework
28	4	Understand the lecture topic	Solved equations based on lightning rod circuit calculations.	Lecture + Laboratory	Practical application , Exam, Homework
29	4	Understand the lecture topic	Methods of implementing projects ,	Lecture + Laboratory	Practical application , Exam, Homework
30	4	Understand the lecture topic	Guessing	Lecture + Laboratory	Practical application , Exam, Homework

### 11.Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Establishments And machines electrical Composition Doctor Muzaffar Anwar Grace, my light Bowie David, mighty Slaves Kazem.
Main references (sources)	<ol style="list-style-type: none"> <li>1) Electrical installation and workshop technology Vol. I, II, III (by F.G. Thompson).</li> <li>2) Electrical installation technology (by Michael Needle).</li> </ol>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Websites on the Internet related to electrical engineering.

## Course Description Form

<b>1. Course Name:</b>					
Computer applications/ 2					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Ola Najah kazem					
Email: <a href="mailto:ola.najah@atu.edu.iq">ola.najah@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Dealing with the computer and using it in the correct way.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lectures using modern methods and laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Understand the lecture topic	Working with WORD 2007.	Lecture + Laboratory	Practical application , Exam, Homework
2	1	Understand the lecture topic	The program interface	Lecture + Laboratory	Practical application , Exam, Homework
3	1	Understand the lecture topic	Investigation orders t	Lecture + Laboratory	Practical application , Exam, Homework
4	1	Understand the lecture topic	Setting page margins, paper size, font formatting, bullets and numbering, display methods, screen zoom in and out	Lecture + Laboratory	Practical application , Exam, Homework
5	1	Understand the lecture topic	Columns and tables	Lecture + Laboratory	Practical application , Exam, Homework
6	1	Understand the lecture topic	Edit columns and rows	Lecture + Laboratory	Practical application , Exam, Homework
7	1	Understand the lecture topic	Borders and shading, spelling and grammar, thesaurus, translation, translation screen tip	Lecture + Laboratory	Practical application , Exam, Homework
8	1	Understand the lecture topic	Pictures and objects	Lecture + Laboratory	Practical application , Exam, Homework

9	1	Understand the lecture topic	Find and replace, create templates, print preview, print	Lecture + Laboratory	Practical application , Exam, Homework
10	1	Understand the lecture topic	Working with Excel 2007	Lecture + Laboratory	Practical application , Exam, Homework
11	1	Understand the lecture topic	Page layout in Excel	Lecture + Laboratory	Practical application , Exam, Homework
12	1	Understand the lecture topic	Views, page breaks control	Lecture + Laboratory	Practical application , Exam, Homework
13	1	Understand the lecture topic	Types of data entered in Excel	Lecture + Laboratory	Practical application , Exam, Homework
14	1	Understand the lecture topic	Formatting commands	Lecture + Laboratory	Practical application , Exam, Homework
15	1	Understand the lecture topic	Hide and show rows, columns, and sheets, freeze rows and columns,	Lecture + Laboratory	Practical application , Exam, Homework
16	1	Understand the lecture topic	Arithmetic operations and their precedence	Lecture + Laboratory	Practical application , Exam, Homework
17	1	Understand the lecture topic	Function formulas	Lecture + Laboratory	Practical application , Exam, Homework
18	1	Understand the lecture topic	Conditional IF function	Lecture + Laboratory	Practical application , Exam, Homework
19	1	Understand the lecture topic	Make charts (charts)	Lecture + Laboratory	Practical application , Exam, Homework
20	1	Understand the lecture topic	Networks and their types, network forms, network protocols	Lecture + Laboratory	Practical application , Exam, Homework
21	1	Understand the lecture topic	The Internet	Lecture + Laboratory	Practical application , Exam, Homework
22	1	Understand the lecture topic	Connecting to the Internet 1	Lecture + Laboratory	Practical application , Exam, Homework
23	1	Understand the lecture topic	Connecting to the Internet 2	Lecture + Laboratory	Practical application , Exam, Homework
24	1	Understand the lecture topic	Web addresses	Lecture + Laboratory	Practical application , Exam, Homework
25	1	Understand the lecture topic	Search engines1	Lecture + Laboratory	Practical application , Exam, Homework
26	1	Understand the lecture topic	How to search for information on the network	Lecture + Laboratory	Practical application , Exam, Homework
27	1	Understand the lecture topic	Download files from the Internet, prepare for printing, and print	Lecture + Laboratory	Practical application , Exam, Homework
28	1	Understand the lecture topic	Definition of E-MAIL	Lecture + Laboratory	Practical application , Exam, Homework

29	1	Understand the lecture topic	Download the ELECTRONICS WORKBENCH(MULTIZIM) program , run the program, and benefits of the program	Lecture + Laboratory	Practical application , Exam, Homework
30	1	Understand the lecture topic	Getting to know the program interface, menu contents, and toolbars	Lecture + Laboratory	Practical application , Exam, Homework

### 11.Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

### 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The institute's library for additional curricula resources study.
Main references (sources)	A book for learning Office programs from A to Z. What is the Internet book? Committed learning book.
Recommended books and references (scientific journals, reports...)	All solid scientific journals related to computer science
Electronic References, Websites	Websites on the Internet related to computer science.

## Course Description Form

<b>1. Course Name:</b>					
Electrical drawing					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First /First					
<b>4. Description Preparation Date:</b>					
22/2/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (Practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
45 hours / 3 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: mohanad mosa mohammed					
Email: <a href="mailto:mohanad.hamza@atu.edu.iq">mohanad.hamza@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Recognizes electrical symbols and read maps and various electrical circuits.</li> <li>• Learn how to draw symbols and connections for electrical installations, networks, and machines</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Laboratories.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	3	Understand the lecture topic	Drawing the electrical wiring diagram for a two-storey building	Laboratory	Practical application , Quiz
2	3	Understand the lecture topic	Training students to see with ink and inking the previous painting	Laboratory	Practical application , Quiz
3	3	Understand the lecture topic	Drawing and preparing lists of what is required from the markets, their prices, quantities and units.	Laboratory	Practical application , Quiz
4	3	Understand the lecture topic	Explaining electrical installations in various locations.	Laboratory	Practical application , Quiz
5	3	Understand the lecture topic	Drawing of the electrical wiring board for connecting a three-phase transformer 1.	Laboratory	Practical application , Quiz
6	3	Understand the lecture topic	Draw a picture Electrical connection of a three-phase transformer 2.	Laboratory	Practical application , Quiz

7	3	Understand the lecture topic	Draw a picture Electrical connections to reverse the direction of rotation of a three-phase induction motor .	Laboratory	Practical application , Quiz
8	3	Understand the lecture topic	draw a picture Complete electrical connections to operate a three-phase electric motor .	Laboratory	Practical application , Quiz
9	3	Understand the lecture topic	Drawing a panel for a battery charging device from a three-phase source.	Laboratory	Practical application , Quiz
10	3	Understand the lecture topic	Establishing the complete installation of the distribution panel for a three-phase electric current generator.	Laboratory	Practical application , Quiz
11	3	Understand the lecture topic	draw a picture Special electrical connections to ensure compatibility between a three-phase electric motor and the National Electricity Company	Laboratory	Practical application , Quiz
12	3	Understand the lecture topic	Study and analysis of electrical maps.	Laboratory	Practical application , Quiz
13	3	Understand the lecture topic	Using an electronic calculator to draw electrical maps	Laboratory	Practical application , Quiz
14	3	Understand the lecture topic	review	Laboratory	Practical application , Quiz
15	3	Understand the lecture topic	review	Laboratory	Practical application , Quiz

### 11. Course Evaluation

First semester / 50 marks

Final exam/50 marks

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electrical drawing book.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Electrical drawing websites.

## Course Description Form

<b>1. Course Name:</b>					
PLC					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical + practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
90 hours / 6 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Malik Ghazi Kazem					
Email: malik.kadhim.ims@atu.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Dealing with digital logic circuits.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lecture + Laboratory.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understand the lecture topic	Introduction to Programmable Controllers	Lecture + Laboratory	Practical application Homework
2	3	Understand the lecture topic	Number Systems and Codes	Lecture + Laboratory	Practical application Homework
3	3	Understand the lecture topic	Logic Concepts	Lecture + Laboratory	Practical application Homework
4	3	Understand the lecture topic	Introduction	Lecture + Laboratory	Practical application Homework
5	3	Understand the lecture topic	Configuring the PLC Memory—I/O Addressing	Lecture + Laboratory	Practical application Homework
6	3	Understand the lecture topic	Summary of Memory, Scanning, and I/O Interaction	Lecture + Laboratory	Practical application Homework
7	3	Understand the lecture topic	The Discrete input/output System	Lecture + Laboratory	Practical application Homework
8	3	Understand the lecture topic	PLC Instructions for Discrete Outputs	Lecture + Laboratory	Practical application Homework
9	3	Understand the lecture topic	The Analog Input/Output System	Lecture + Laboratory	Practical application

					Homework
10	3	Understand the lecture topic		Lecture + Laboratory	Practical application Homework
11	3	Understand the lecture topic	Instructions for Analog Output Modules	Lecture + Laboratory	Practical application Homework
12	3	Understand the lecture topic	Special Function I/O and Serial Communication Interfacing	Lecture + Laboratory	Practical application Homework
13	3	Understand the lecture topic	Programming Languages	Lecture + Laboratory	Practical application Homework
14	3	Understand the lecture topic	Counter Instructions	Lecture + Laboratory	Practical application Homework
15	3	Understand the lecture topic	Network Communication Instructions	Lecture + Laboratory	Practical application Homework

### 11.Course Evaluation

Second semester/50 marks

Final exam/50 marks

### 12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The institute's library for additional curricula resources study.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Websites on the Internet related to digital logic.

## Course Description Form

<b>1. Course Name:</b>					
The project					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First+Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
weekly (Practical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours / 4 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Mohammed Salih Hassan - Malik Ghazi Kazem- Yasser Abidnoor Jebbar Email: <a href="mailto:hs.muhamad@atu.edu.iq">hs.muhamad@atu.edu.iq</a> ; <a href="mailto:malik.kadhim.ims@atu.edu.iq">malik.kadhim.ims@atu.edu.iq</a> ; <a href="mailto:yasser.jebbar.ims@atu.edu.iq">yasser.jebbar.ims@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
Course Objectives	<ul style="list-style-type: none"> <li>• He relies on himself to prove his practical skill.</li> <li>• Defines the salient objectives of the project.</li> <li>• Determines action steps, analyzes them, and develops alternatives if obstacles arise.</li> <li>• He sees and sees a simplified model of his work.</li> <li>• Learns to write the final report of the project in an organized manner according to the research format.</li> </ul>				
<b>9. Teaching and Learning Strategies</b>					
Strategy	Laboratory.				
<b>10. Course Structure</b>					
Month	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the lecture topic	Distributing the projects to the students, meeting with the supervising professor, and starting to review the library to obtain resources for the project assigned to the students	Laboratory.	Discussion
2	2	Understand the lecture topic	Collect information about the project, begin the theoretical study, and prepare the necessary designs to implement the project.	Laboratory.	Discussion
3	2	Understand the lecture topic	Begin implementing the planned designs in practice and conduct experiments and tests to obtain practical results.	Laboratory.	Discussion
4	2	Understand the lecture topic	Testing and evaluation of the previous stages.	Laboratory.	Discussion

5	2	Understand the lecture topic	Transferring the laboratory-conducted experiments to the final panels to obtain the practical designed model, conduct testing on the final model, and obtain the final results for discussion.	Laboratory.	Discussion
6	2	Understand the lecture topic	Discussing the practical results and their compatibility with the realistic results and finding the necessary explanations for the apparent cases.	Laboratory.	Discussion
7	2	Understand the lecture topic	Arranging the written parts of the report for each of the previous stages of writing the final report on the project	Laboratory.	Discussion
8	2	Understand the lecture topic	Delivering the practical model of the project with the final report for final testing and evaluation.	Laboratory.	Discussion

### 11. Course Evaluation

### 12. Learning and Teaching Resources

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

## Course Description Form

<b>1. Course Name:</b>					
English language/2					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (Theoretical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Afrah Muhammad Muslim					
Email: <a href="mailto:afrah.al-sowaidi.ims@atu.edu.iq">afrah.al-sowaidi.ims@atu.edu.iq</a>					
<b>8. Course Objectives</b>					
Course Objectives		<ul style="list-style-type: none"> <li>• Learn the basics of the English language.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
Strategy		Lectures using modern methods.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	1	Understand the lecture topic	The student learns about the types of units found in the Oxford University textbook	Lecture	Quiz
1	1	Understand the lecture topic	Unit One1	Lecture	Quiz
2	1	Understand the lecture topic	First unit2	Lecture	Quiz
3	1	Understand the lecture topic	Unit Two1	Lecture	Quiz
4	1	Understand the lecture topic	Unit Two2	Lecture	Quiz
5	1	Understand the lecture topic	Unit Three1	Lecture	Quiz
6	1	Understand the lecture topic	Unit Three2	Lecture	Quiz
7	1	Understand the lecture topic	Unit Four1	Lecture	Quiz
8	1	Understand the lecture topic	Unit Four2	Lecture	Quiz
9	1	Understand the lecture topic	Unit Five1	Lecture	Quiz
10	1	Understand the lecture topic	Unit Five2	Lecture	Quiz
11	1	Understand the lecture topic	Unit Six1	Lecture	Quiz
12	1	Understand the lecture topic	Unit Six2	Lecture	Quiz
13	1	Understand the lecture topic	Unit Seven1	Lecture	Quiz
14	1	Understand the lecture topic	Unit Seven2	Lecture	Quiz
15	1	Understand the lecture topic	Unit Eight1	Lecture	Quiz
16	1	Understand the lecture topic	Unit nine	Lecture	Quiz
17	1	Understand the lecture topic	Unit Ten1	Lecture	Quiz
18	1	Understand the lecture topic	Unit Ten2	Lecture	Quiz

19	1	Understand the lecture topic	Unit Eleven1	Lecture	Quiz
20	1	Understand the lecture topic	Unit Eleven2	Lecture	Quiz
21	1	Understand the lecture topic	Unit Twelve1	Lecture	Quiz
22	1	Understand the lecture topic	Unit Twelve2	Lecture	Quiz
23	1	Understand the lecture topic	Unit Thirteen1	Lecture	Quiz
24	1	Understand the lecture topic	Unit Thirteen2	Lecture	Quiz
25	1	Understand the lecture topic	Unit Fourteen1	Lecture	Quiz
26	1	Understand the lecture topic	Unit Fourteen2	Lecture	Quiz
27	1	Understand the lecture topic	Unit Fifteen1	Lecture	Quiz
28	1	Understand the lecture topic	Unit Fifteen2	Lecture	Quiz
29	1	Understand the lecture topic	Review	Lecture	Quiz

### 11. Course Evaluation

First semester / 20 marks  
 Second semester/20 marks  
 Activity/10 marks  
 Final exam/50 marks

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	New Headway 2.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Course Description Form

<b>1. Course Name:</b>					
Crimes of the baath regime in iraq					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First + Second/First					
<b>4. Description Preparation Date:</b>					
22/12/2024					
<b>5. Available Attendance Forms:</b>					
Weekly (theoretical)					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Muhammad Ghazi Abdul Hussein					
Email: <a href="mailto:amyr86217@gmail.com">amyr86217@gmail.com</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>The student learns about the brutality and crimes of the Baathist regime</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Lecture and discussion.			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Understand the lecture topic	A brief overview of the political systems in Iraq (1921-2003) “The monarchy, the Republican era (1958-1968), the Republican era (Baathist 1968-2003 )	Lecture	Discussion
2	1	Understand the lecture topic	The Baathist regime’s violations of public rights and freedoms “violation of intellectual rights and public freedoms, violation of intellectual rights, violation of public freedoms, violation of the right to party pluralism.”	Lecture	Discussion
3	1	Understand the lecture topic	Violations of social, political and cultural rights , violation of freedom of opinion, revocation of citizenship, other social rights, violation of cultural rights and freedoms, violation of international law, the first and second Gulf wars, the international blockade on Iraq due to the invasion of Kuwait.	Lecture	Discussion
4	1	Understand the lecture topic	The impact of the Baathist regime’s behavior on society and its control over the state: random arrests, torture of prisoners, and executions, arbitrary arrest of suspects and torture of prisoners, execution of soldiers and civilians,	Lecture	Discussion
5	1	Understand the lecture topic	Limiting the three powers in the hands of the Baathist regime: separation of powers, ruling powers under the system (executive, legislative and judicial), partisan requirements for limiting power, tyranny in corrupting morals and fighting scholars.	Lecture	Discussion

6	1	Understand the lecture topic	The impact of the transitional period in combating authoritarian politics: The concept of transitional justice and the mechanisms for achieving it. "The concept of transitional justice and its advantages, the goals of transitional justice."	Lecture	Discussion
7	1	Understand the lecture topic	The psychological field: The psychological and social mechanisms used by the previous regime: "the phenomenon of scarcity and scarcity, the phenomenon of distraction, the mechanism of terror and intimidation, the mechanism of psychological pressure and punishment, ethnic cleansing, scientific and cultural impoverishment."	Lecture	Discussion
8	1	Understand the lecture topic	Family rule and the reduction of the nation to the personality of the ruler, the dialectic of the ruler and the citizen between hypocrisy and injustice and the promotion of a culture of praise, loyalty first and the militarization of society.	Lecture	Discussion
9	1	Understand the lecture topic	Religion and the State: Crimes of preventing the dissemination of religious teachings and confiscating science and knowledge. Crimes of preventing the dissemination of religious teachings and confiscating science and knowledge. Crimes of killing scholars and religious youth and banning religious parties. Religious authority and the religious seminary. Banning parties in general and religious parties in particular .	Lecture	Discussion
10	1	Understand the lecture topic	Culture, media, and the militarization of society: the militarization of the educational institution, the militarization of media discourse, the militarization of literature and art.	Lecture	Discussion
11	1	Understand the lecture topic	The impact of repression and wars on the environment and the population: the use of internationally prohibited weapons and environmental pollution "Halabja - Basra"	Lecture	Discussion
12	1	Understand the lecture topic	Scorched Earth Policy: The Battle of the Jassim River and its effects on the environment, burning oil wells, minefields and war remnants, bombing Iraqi cities.	Lecture	Discussion
13	1	Understand the lecture topic	Drying the marshes and straw migration: concept and importance, the role of the former regime in drying the marshes, the effects of drying the marshes,	Lecture	Discussion
14	1	Understand the lecture topic	Destruction of the agricultural and animal environment and radioactive contamination: Dujail, bulldozing palm groves, Basra,	Lecture	Discussion
15	1	Understand the lecture topic	Mass graves and bombing of places of worship	Lecture	Discussion
16	1	Understand the lecture topic	A brief overview of the political systems in Iraq (1921-2003) "The monarchy, the Republican era (1958-1968), the Republican era (Baathist 1968-2003 )	Lecture	Discussion
17	1	Understand the lecture topic	The Baathist regime's violations of public rights and freedoms "violation of intellectual rights and public freedoms, violation of intellectual rights, violation of public freedoms, violation of the right to party pluralism."	Lecture	Discussion
18	1	Understand the lecture topic	Violations of social, political and cultural rights, violation of freedom of opinion, revocation of citizenship, other social rights, violation of cultural rights and freedoms, violation of international law, the first and second Gulf wars, the international blockade	Lecture	Discussion

			on Iraq due to the invasion of Kuwait.		
19	1	Understand the lecture topic	The impact of the Baathist regime's behavior on society and its control over the state: random arrests, torture of prisoners, and executions, arbitrary arrest of suspects and torture of prisoners, execution of soldiers and civilians,	Lecture	Discussion
20	1	Understand the lecture topic	Limiting the three powers in the hands of the Baathist regime: separation of powers, ruling powers under the system (executive, legislative and judicial), partisan requirements for limiting power, tyranny in corrupting morals and fighting scholars.	Lecture	Discussion
21	1	Understand the lecture topic	The impact of the transitional period in combating authoritarian politics: The concept of transitional justice and the mechanisms for achieving it. "The concept of transitional justice and its advantages, the goals of transitional justice."	Lecture	Discussion
22	1	Understand the lecture topic	The psychological field: The psychological and social mechanisms used by the previous regime: "the phenomenon of scarcity and scarcity, the phenomenon of distraction, the mechanism of terror and intimidation, the mechanism of psychological pressure and punishment, ethnic cleansing, scientific and cultural impoverishment."	Lecture	Discussion
23	1	Understand the lecture topic	Family rule and the reduction of the nation to the personality of the ruler, the dialectic of the ruler and the citizen between hypocrisy and injustice and the promotion of a culture of praise, loyalty first and the militarization of society.	Lecture	Discussion
24	1	Understand the lecture topic	Religion and the State: Crimes of preventing the dissemination of religious teachings and confiscating science and knowledge. Crimes of preventing the dissemination of religious teachings and confiscating science and knowledge. Crimes of killing scholars and religious youth and banning religious parties. Religious authority and the religious seminary. Banning parties in general and religious parties in particular .	Lecture	Discussion
25	1	Understand the lecture topic	Culture, media, and the militarization of society: the militarization of the educational institution, the militarization of media discourse, the militarization of literature and art.	Lecture	Discussion
26	1	Understand the lecture topic	The impact of repression and wars on the environment and the population: the use of internationally prohibited weapons and environmental pollution "Halabja - Basra"	Lecture	Discussion
27	1	Understand the lecture topic	Scorched Earth Policy: The Battle of the Jassim River and its effects on the environment, burning oil wells, minefields and war remnants, bombing Iraqi cities.	Lecture	Discussion
28	1	Understand the lecture topic	Drying the marshes and straw migration: concept and importance, the role of the former regime in drying the marshes, the effects of drying the marshes,	Lecture	Discussion
29	1	Understand the lecture topic	Destruction of the agricultural and animal environment and radioactive contamination: Dujail, bulldozing palm groves, Basra,	Lecture	Discussion
30	1	Understand the lecture topic	Mass graves and bombing of places of worship	Lecture	Discussion

### 11. Course Evaluation

First semester / 20 marks

Second semester/20 marks

Activity/10 marks

Final exam/50 marks

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Recommended books and references (scientific journals, reports...)

Electronic References, Websites

## Course Description Form

### 25. Course Name:

Arabic Language/2

### 26. Course Code:

### 27. Semester / Year:

First + Second/First

### 28. Description Preparation Date:

22 /12/2024

### 29. Available Attendance Forms:

Weekly (theoretical)

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

30 hours / 2 units

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

Name: fadhela.ismiail

Email: fadhela.ismiail.ims@atu.edu.iq

### 32. Course Objectives

Course Objectives

- Learn the basics of the Arabic language.

### 33. Teaching and Learning Strategies

Strategy Lectures using modern methods.

### 34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1	1	Understand the lecture topic	Definition of language and the meaning of Quranic expression	Lecture	Quiz
2	1	Understand the lecture topic	Quranic expression grammatically	Lecture	Quiz
3	1	Understand the lecture topic	Quranic expression rhetorically	Lecture	Quiz
4	1	Understand the lecture topic	Free poetry and its pioneers	Lecture	Quiz
5	1	Understand the lecture topic	The poet Badr Shaker insults his life and poetry	Lecture	Quiz
6	1	Understand the lecture topic	Authentic signs of parsing	Lecture	Quiz
7	1	Understand the lecture topic	Sub-parsing marks	Lecture	Quiz
8	1	Understand the lecture topic	Sentence in language	Lecture	Quiz
9	1	Understand the lecture topic	The nominal sentence is the subject and the predicate	Lecture	Quiz
10	1	Understand the lecture topic	Types of news and its conditions	Lecture	Quiz
11	1	Understand the lecture topic	Nawasi beginning and its effect on the sentence	Lecture	Quiz
12	1	Understand the lecture topic	And her sisters	Lecture	Quiz
13	1	Understand the lecture topic	Meanings of letters that are already suspicious	Lecture	Quiz
14	1	Understand the lecture topic	The difference between if and when	Lecture	Quiz
15	1	Understand the lecture topic	The meaning of the imperfect verb	Lecture	Quiz
16	1	Understand the lecture topic	He and her sisters	Lecture	Quiz
17	1	Understand the lecture topic	The perfect verb and types of verb in terms of time	Lecture	Quiz
18	1	Understand the lecture topic	The five verbs and their parsing	Lecture	Quiz
19	1	Understand the lecture topic	Some common linguistic errors	Lecture	Quiz
20	1	Understand the lecture topic	Linguistic vocabulary is one of the characteristics of language	Lecture	Quiz
21	1	Understand the lecture topic	Conversations, children and Jupiter	Lecture	Quiz
22	1	Understand the lecture topic	Linguistic differences	Lecture	Quiz
23	1	Understand the lecture topic	The linguistic triangle	Lecture	Quiz
24	1	Understand the lecture topic	Al-Muthanna and its parsing	Lecture	Quiz
25	1	Understand the lecture topic	Plural and its types	Lecture	Quiz

26	1	Understand the lecture topic	Sound masculine plural	Lecture	Quiz
27	1	Understand the lecture topic	Sound feminine plural	Lecture	Quiz
28	1	Understand the lecture topic	Collect crushing	Lecture	Quiz
29	1	Understand the lecture topic	Language rules and dealing with them	Lecture	Quiz
30	1	Understand the lecture topic	Linguistic and grammatical corrections	Lecture	Quiz

### 35. Course Evaluation

First semester / 20 marks  
 Second semester/20 marks  
 Activity/10 marks  
 Final exam/50 marks

### 36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Explanation of Ibn Aqeel and adequate grammar
Recommended books and references (scientific journals, reports...)	Mosque of Arabic Lessons by Sheikh Mustafa Al-Ghalayini
Electronic References, Websites	