



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

# **Academic Program and Course**

2024

## Academic Program Description Form

**University Name:** University of Warith Al-Anbiya

**Faculty/Institute:** College of Science

**Scientific Department:** Department of Refrigeration and Air Conditioning  
Technology Engineering

**Academic or Professional Program Name:** Bachelor's degree, Refrigeration and Air  
Conditioning Technology Engineering

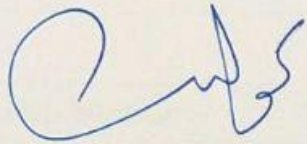
**Final Certificate Name:** Bachelor of Engineering in Refrigeration and Air  
Conditioning Technology

**Academic System:** annual

**Description Preparation Date:** 7/3/2024

**File Completion Date:** 15/3/2024

**Signature:**



**Head of Department Name:**

Mohammed H. Abboud

**Date:** 18/3/2024

**Signature:**



ا.م.د. حسين هادي حسين  
عميد كلية الهندسة

**Scientific Associate Name:**

**Date:** 18/3/2024

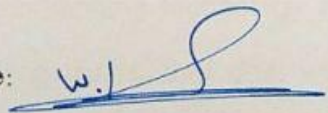
The file is checked by **Dr. Waleed alaa. Jasser Abbas**

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

**Date:** 18/3/2024

**Signature:**



**Approval of the Dean**



ا.م.د. حسين هادي حسين  
عميد كلية الهندسة

## 1. Program Vision

The faculty members in the Department of Air Conditioning and Refrigeration Technology Engineering at the College of Engineering at Warith Al-Anbia University work that providing high-quality technical education makes the target return from the educational process more efficient and distinguished by developing technical capabilities, critical thinking skills, social and personal skills, and work values in an ever-changing environment in the engineering of air conditioning and refrigeration technologies. Small class sizes within air conditioning and refrigeration technology. Architect a close working relationship between faculty and students in an informal and nurturing atmosphere that is a technical leader and innovator in providing high-quality educational programs and services, in a highly competitive high-tech global environment.

## 2. Program Mission

The Refrigeration and Air Conditioning Engineering Technologies program is designed to provide students with the skills to improve their employability by preparing them for a career in refrigeration and air conditioning engineering. Students learn how to manage refrigeration and air conditioning workshops and perform all necessary services and maintenance. The curriculum consists of designing and maintaining refrigeration and air conditioning systems using modern methods. Students will have the opportunity to learn the principles of refrigeration and air conditioning technology and will be prepared to work in companies and programming teams that deal with the design, implementation and operation of heating systems. ventilation and air conditioning. Furthermore, students will be

provided with mechanical, electrical and computer control knowledge of refrigeration and air conditioning systems. The first level introduces students to the basics of general mechanical engineering and is suitable for applying to all programs in the field of mechanical energy including thermal energy. Second level: Preparing the student for specialized topics in the third and fourth levels. Therefore, refrigeration and air conditioning technology engineering students are trained to search for academic information, in line with the directions of the university and college.

### **3. Program Objectives**

- 1- Preparing and graduating an engineering cadre that achieves the main technical and knowledge requirements to be a high-quality engineering and technical resource in the field of refrigeration and air conditioning.
- 2- Consolidating the principle of participation in society to spread the culture of technical education and its applications.
- 3- Graduating scientific teams with confident skill and understanding in the field of calculation and analysis of thermal loads, as well as in the activities of manufacturing, repair, control and maintenance of related devices.
- 4- Organizing training and qualification courses by an efficient cadre with the participation of the department's students to engage in the labor market.
- 5- Strengthening the scientific and administrative relationship with the scientific and administrative colleges with the corresponding scientific and engineering colleges, as well as ministries, industrial companies and the rest of the relevant institutions for the needs of teaching, rehabilitation and development of education programs.
- 6- Develop and develop all plans and scientific and administrative curricula necessary to achieve the above paragraphs and as required and follow up the feedback of the work of the plan or curriculum department.

**4. Program Accreditation**

Planned for Program Accreditation on 1/9/2024

**5. Other external influences**

Scientific Library  
Internet  
Laboratories  
Scientific Seminars

**6. Program Structure**

Reviews*	Percentage	Unit of study	Number of Courses	Program Structure
				Requirements of the institution
				College Requirements
First Stage (Bologna Track) And the second, third and fourth stages (annual system)		240	43	Department Requirements
		Updated	There is	Summer Training
				Other

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

<b>7. Program Description</b>				
Credit Hours		Course Name	Course or Course Code	Year/Level
Practical	Theoretical			
	6	Mathematics	MPAC100	First stage First course
	6	Engineering Drawing	MPAC101	
		Workshops	MPAC102	
	4	Engineering Materials	MPAC103	
	4	English	MPAC104	
4	4	Electrical Engineering	MPAC107	First Stage (Second Course)
	6	Engineering Mechanics	MPAC108	
4	6	Thermodynamics 1	MPAC109	
	2	Humans Rights and Democracy	MPAC110	
	2	Arabic	MPAC111	
4	2	Computer principles	MPAC112	
	3	<b>Advanced Mathematics</b>	<b>MPAC200</b>	Second stage
2	1	<b>Mechanical Drawing</b>	<b>MPAC201</b>	
2	3	<b>Fluid Mechanics</b>	<b>MPAC202</b>	
2	3	<b>Thermodynamics 2</b>	<b>MPAC203</b>	
5	5	<b>Fundamentals of Air Conditioning and Refrigeration</b>	<b>MPAC205</b>	
2	2	<b>Strength of Materials</b>	<b>MPAC206</b>	
2	1	<b>Computer Applications 1</b>	<b>MPAC207</b>	
	2	<b>English 2</b>	<b>MPAC208</b>	
	2	<b>The crimes of the Baath regime in Iraq</b>	-	
-	-	<b>Summer Training 1</b>	<b>MPAC209</b>	
	4	<b>Engineering and Numerical Analysis</b>	<b>MPAC300</b>	
2	1	<b>Computer Applications 2</b>	<b>MPAC301</b>	
	3	<b>Theory of Machine and Vibrations</b>	<b>MPAC302</b>	
2	3	<b>Heat Transfer</b>	<b>MPAC303</b>	
1	2	<b>Air Conditioning and Refrigeration systems</b>	<b>MPAC304</b>	
	3	<b>Mechanical Design</b>	<b>MPAC305</b>	
3	1	<b>Maintenance of Air Conditioning systems</b>	<b>MPAC307</b>	
	2	<b>English 3</b>	<b>MPAC308</b>	
2	1	<b>Air Conditioning systems Drawing</b>	<b>MPAC309</b>	
2	3	<b>Electrical and Electronic Engineering</b>	<b>MPAC311</b>	
-	-	<b>Summer Training 2</b>	<b>MPAC310</b>	

	6	<b>Project</b>	<b>MPAC400</b>	Fourth stage
2	2	<b>Air Conditioning System Design</b>	<b>MPAC401</b>	
2	3	<b>Power Plants</b>	<b>MPAC402</b>	
2	1	<b>Computer Applications 3</b>	<b>MPAC404</b>	
	3	<b>Industrial Engineering Management</b>	<b>MPAC405</b>	
2	3	<b>Refrigeration Systems</b>	<b>MPAC406</b>	
	3	<b>Renewable Energy</b>	<b>MPAC407</b>	
	2	<b>Professional Ethics</b>	<b>MPAC408</b>	
	2	<b>English 4</b>	<b>MPAC409</b>	
1	3	<b>Control and Measurements</b>	<b>MPAC410</b>	

8. <b>Expected learning outcomes of the program</b>	
<b>Knowledge</b>	
<ul style="list-style-type: none"> <li>• Maintenance of electrical, electronic and mechanical systems that are part of air conditioning systems</li> <li>• Identification of mechanical failures in air conditioning systems in accordance with the principles of thermodynamic operation using electronic diagnostic devices.</li> <li>• Improving energy consumption mechanisms in air conditioning and air quality systems, in response to national and international environmental quality standards.</li> <li>• Participate in production systems in the air conditioning industry in pursuit of resource optimization in manufacturing processes.</li> <li>• Air conditioner manufacturing processes through the use of existing technology to manufacture air conditioner parts.</li> <li>• Development of air conditioning system design projects, using various programs for estimating heat load.</li> <li>• Implementation of quality and environmental standards in air conditioning cooling operations, within the framework of national and international control plans.</li> </ul>	<p>Learning Outcomes (1)</p>

<ul style="list-style-type: none"> <li>• Implementation of programs included in engineering drawings and drawings of air conditioning ducts and systems.</li> <li>• Developing the use of renewable energy in air conditioning systems.</li> <li>• Appropriately interpret and communicate technical texts in the mother tongue and in English for use in the field of refrigeration and air conditioning engineering.</li> </ul>	
<b>Skills</b>	
<p>1 – Installation and operation of air conditioning and freezing systems.</p> <p>2 – Management of maintenance and repair complexes for various air conditioning and freezing systems and units.</p> <p>3 – Dealing with modern inspection and diagnostic devices and equipment in the field of competence.</p> <p>4- The possibility of developing air conditioning and freezing systems and achieving specific goals</p> <p>5- The ability to make updates to improve the performance of air conditioning and freezing units</p> <p>6- The ability to conduct corrective calculations for the manufacture of devices and systems in the field of specialization</p>	<p>Learning Outcomes (2)</p>
<b>Values</b>	
<p>Learning Outcomes (1)</p> <p>Group/Team Leadership</p> <p>Graduates will be able to motivate themselves, collaborate effectively with other professionals in different disciplines, backgrounds and interests to solve problems, work clearly in stressful situations under pressure, and demonstrate knowledge and commitment to following safety measures for self and others.</p> <p>Learning Outcomes (2)</p> <p>Private Professional Development</p> <p>Graduates will be able to make their own decisions, plan and solve problems, and stay up-to-date on professional matters.</p>	<p>Learning outcomes (3) and (4)</p>
<b>9. Teaching and Learning Strategies</b>	
<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Lab</li> <li>• Workshop</li> <li>• Methodological training</li> <li>• Scientific visits</li> </ul>	



## 10. Evaluation methods

- Oral tests
- Written tests
- Semester Exams
- Final Exams
- Daily Assessment

## 11. Faculty

### Faculty Members

Preparation of the teaching staff		Special Requirements/Skills (if applicable)		Specialization		Academic Rank
lecturer	angel			special	year	
	√			√		Eng. Ehab Omar Abbas Taleb
	√			√		Prof. Dr. Heavenly ruler Sultan Hussein
	√			√		Prof. Dr. Nihad Abdel Jalil Majeed Hamid
	√			√		Dr. Ali Mohamed Hussein Mohsen
	√			√		Eng. Amin Sami Amin Hassan
	√			√		Eng. Hassanein Hamoud Bahaa El-Din
	√			√		Eng. Riyam Abdul Razzaq Salman

	√			√		<b>Um Dr. Muhammad Hassan Abboud Mousa</b>
	√			√		<b>Prof. Dr. Hussein Salem Kitan Aziz</b>
	√			√		<b>Eng. Ali Hammoudi Abdel Karim Wazir</b>
	√			√		<b>Assoc. Prof. Dr. Raouf Mohammed Radi Hussein</b>
	√					<b>Eng. Mohammed Iyad Ali Shaalan</b>
	√			√		<b>Eng. Hussein Ali Jaafar Fayyad</b>
	√			√		<b>Eng. Walaa Nasser Abbas Aliwi</b>
	√			√		<b>Eng. Rasoul Hamad Rashid Abboud</b>
√				√		<b>Eng. Ali Musallam Abdulmohsen Abdullah</b>
√				√		<b>Eng. Ahmed Aliwi Samarmad Hamad</b>
√				√		<b>Eng. Ahmed Ihsan Jassim</b>
√				√		<b>Assoc. Prof. Mohannad Kamel Abdel Hamid</b>
√				√		<b>M.M Samer Aswad Cookies</b>
√				√		<b>Eng. Yousef Saadoun Abdullah</b>
√				√		<b>Eng. Sarah Hashem Mohammed</b>
√				√		<b>Eng. Mousa Ali Saqr</b>
√				√		<b>Eng. Mohammed Mohsen Jassim</b>
√				√		<b>Eng. Hadeel Salah Hadi</b>

<b>Professional Development</b>
<b>Mentoring new faculty members</b>
<ol style="list-style-type: none"> <li>1- Dealing with individuals working in the field of specialization and knowledge of public relations</li> <li>2- The ability to identify good origins for equipping different air conditioning and freezing units</li> <li>3- Dealing with computer software related to specialization and other software</li> <li>4- Dealing with terms related to specialization and conversation in English</li> </ol>
<b>Professional development of faculty members</b>
Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

<b>12. Acceptance Criterion</b>
<ul style="list-style-type: none"> <li>• Graduate of middle school / scientific branch</li> <li>• Graduate of vocational preparatory school <ul style="list-style-type: none"> <li>• Top ten students from the graduates of the institutes of the Central Technical University / corresponding specializations</li> </ul> </li> </ul>

<b>13. The most important sources of information about the program</b>
Library / Internet / Cartoon Sites / Virtual Library

<b>14. Program Development Plan</b>
None

### Curriculum Skills Outline

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

Learning outcomes required from the program																fundament al Or optional	Course Name	Course Code	Year/Lev el
General and transferable skills (other skills related to employability and personal development)				Thinking skills				Subject-specific skills				Knowledge & Understanding							
D 4	D 3	D 2	D 1	C 4	C 3	C 2	C 1	B 4	B 3	B 2	B 1	A 4	A 3	A 2	A 1				
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Essential	Human Rights	MPAC11 0	First stage
√	√	√	√	√	√	√	√	√	√	√	√			√	√	assistant	Mathematics 1	MPAC10 0	
			√			√	√			√	√				√	elective	Calculator Applications 1	MPAC11 2	
	√	√	√		√	√	√		√	√	√		√	√	√	Essential	Engineering Drawing	MPAC10 1	
		√	√	√	√	√	√		√	√	√	√	√	√	√	Essential	Mechanics	MPAC10 8	
	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Essential	Electrical Technology	MPAC10 7	
	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Essential	modulus	MPAC10 2	

√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Essential	Engineering Materials	MPAC103	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Essential	Thermodynamics 1	MPAC109	
√	√	√	√													assistant	English Language	MPAC104	
√	√	√	√													Essential	Arabic Language	MPAC111	

Curriculum Skills Outline																			
Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.																			
Learning outcomes required from the program														fundamental Or optional	Course Name	Course Code	Year/Level		
General and transferable skills (other skills related to employability and personal development)				Thinking skills				Subject-specific skills				Knowledge & Understanding							
D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B1	A4	A3					A2	A1

√	√	√	√	√	√	√	√		√	√	√		√	√	√		<b>Mathematics 2</b>	MPAC20 0	<b>Second stage</b>
		√	√			√	√			√	√			√	√		<b>Calculator Applications 2</b>	MPAC20 7	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√		<b>Material resistance</b>	MPAC20 6	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		<b>Thermodynami cs 2</b>	MPAC20 3	
		√	√	√	√	√	√		√	√	√	√	√	√	√		<b>Mechanical Drawing</b>	MPAC20 1	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√		<b>Fluid Mechanics</b>	MPAC20 2	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√		<b>Air Conditioning &amp; Cooling 1</b>	MPAC20 5	
√	√	√	√														<b>English Language 2</b>	MPAC20 8	
√	√	√	√	√	√	√	√					√	√	√	√		<b>Baath Party Crimes in Iraq</b>		

### Curriculum Skills Outline

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

<b>Learning outcomes required from the program</b>																			
<b>General and transferable skills (other skills related to employability and personal development)</b>				<b>Thinking skills</b>				<b>Subject-specific skills</b>				<b>Knowledge &amp; Understanding</b>							
<b>D</b>	<b>D</b>	<b>D</b>	<b>D</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>				
<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>				
		√	√	√	√	√	√		√	√	√		√	√	√		<b>Calculator Applications 3</b>	MPAC301	<b>Third stage</b>
		√	√			√	√		√	√	√			√	√		<b>Engineering and numerical analyzes</b>	MPAC300	

√	√	√	√	√	√	√	√		√	√	√		√	√	√		<b>Electrical and Electronic Engineering</b>	MPAC31 1		
		√	√		√	√	√				√				√	√		<b>Theory of machines and vibrations</b>	MPAC30 2	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		<b>Heat transfer</b>	MPAC30 3	
√	√	√	√		√	√	√		√	√	√	√	√	√	√	√		<b>Mechanical Design</b>	MPAC30 5	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√		<b>Drawing of refrigeration and air conditioning systems</b>	MPAC30 9	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√		<b>Maintenance of refrigeration and air conditioning devices</b>	MPAC30 7	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√		<b>Air conditioning and cooling 2</b>	MPAC30 4	
√	√	√	√															<b>English Language 3</b>	MPAC30 8	



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<b>Curriculum Skills Outline</b>																			
<b>Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.</b>																			
<b>Learning outcomes required from the program</b>														<b>fundamental Or optional</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Year/Level</b>		
<b>General and transferable skills (other skills related to employability and personal development)</b>				<b>Thinking skills</b>				<b>Subject-specific skills</b>				<b>Knowledge &amp; Understanding</b>							
<b>D</b>	<b>D</b>	<b>D</b>	<b>D</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>A</b>	<b>A</b>					<b>A</b>	<b>A</b>
<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>				
√	√	√	√	√	√	√	√		√	√	√		√	√	√		<b>Engineering Management and Quality Control</b>	<b>MPAC405</b>	<b>Fourth stage</b>
√	√	√	√	√	√	√	√			√	√	√	√	√	√		<b>Calculator Applications 4</b>	<b>MPAC404</b>	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√		<b>Freezing systems</b>	<b>MPAC406</b>	



