MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH

Scientific Supervision and Evaluation Unit
Quality Assurance and
Academic Accreditation Department
Accreditation Section

Warith Al-Anbiya University (peace be upon him)
College of Engineering

Academic Program and Course Description Guide For the Department of Refrigeration and Air Conditioning Engineering Technology.

2025-2026

Academic Program Description Template

University Name: University of Warith AL-Anbiyaa (*peace be upon him*)

Faculty/Institute: College of Engineering

Scientific Department: Air Conditioning and Refrigeration Techniques

Academic or Professional Program Name: Bachelor's degree in Refrigeration and Air Conditioning Engineering

Final Certificate Name: Bachelor's degree in Refrigeration and Air Conditioning Engineering

Academic Degree System: Bologna + Annual

Description Preparation Date: 17.08.2025

File Completion Date: 25.08.2025

Signature:
Head of Department Name:
Dr. Mohammed Hassan
Date:27.08.2025

Signature:
Scientific Associate Name:
Dr. Hassan. T. Hashim
Date:01.09.2025

The file is checked by: Dr. Salam Al-Rbeawi
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance
Date:15.09.2025

Signature:

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

Approval.
Mr. Dean.

mechanical, electrical and computer control knowledge of refrigeration and air conditioning systems.

Level II: Prepares the student for specialized topics in levels III and IV. Therefore, students of refrigeration and air conditioning engineering are trained to search for academic information, in line with the university and college trends.

3. Program Objectives

1 .The program aims to achieve the following objectives upon graduation and professional practice.

2 .To prepare graduates with a solid scientific and technical foundation in refrigeration and air conditioning engineering, enabling them to work efficiently in various industrial and service sectors.

3 .To empower graduates to design, operate, and maintain refrigeration and air conditioning systems according to approved engineering standards and quality, safety, and energy requirements.

4 .To develop graduates' abilities to analyze engineering problems and propose appropriate solutions using scientific methods and modern technologies.

5 .To enhance graduates' continuous learning and self-development skills to keep pace with technological advancements and professional demands.

6 .To prepare graduates capable of working within multidisciplinary teams and communicating effectively in the engineering work environment.

7. To instill a commitment to professional ethics, social responsibility, environmental conservation, and the sustainable use of energy resources.

4. Program Accreditation

Work is underway to adopt the requirements of the Bologna process to achieve and ensure the quality of learning in the Department of Refrigeration and Air Conditioning Engineering Technology, in coordination with the corresponding college, which is the College of Engineering Technology at the Middle University/Baghdad.

5. Other External influences

1. Scientific library.

2. Scientific laboratories.

3. Engineering workshops.

4. Computer laboratories.

5. Providing internet service.

6. Training workshops and seminars in addition to practical field visits.

6. Program Structure (Annual system for the fourth stage only)

Program Structure	Number of Courses	Credits hours	Percentage	Reviews
Institution Requirements	2	6	11%	Basic course
College Requirements	2	6	11%	Basic course
Department Requirements	6	43	78%	Basic Crouse
Summer Training	2 months			
Other				

- This can include notes whether the course is basic or optional

6, Program Structure (Bologna process)

Program Structure	Number of Courses	Credits hours	Percentage	Reviews
Institution Requirements	5	11	4.8%	Basic course
College Requirements	7	42	18.5%	Basic course
Department Requirements	31	174	76.7%	Basic Course
Summer Training	2 months			
Other				

- This can include notes whether the c

7. Program Description

Year / Level	Crouse Code	Crouse Name	Credit Hours	
			theoretical	Practical
Stage one First Course	ENG 100	Mathematics	6	
	ENG 101	Engineering Drawing	2	4
	ENG 102	Workshops		8
	MPAC103	Engineering Materials	4	
	MTU1002	English	3	
Stage one Second Course	MPAC107	Electrical Engineering	4	2
	MPAC108	Engineering Mechanics	4	
	MPAC108	Thermodynamics 1	6	4
	MTU1006	Humans Rights and Democracy	2	
	MTU1001	Arabic I	2	
	MTU1004	Computer principles	2	2
Stage Two First Course	MPAC 200	Advanced Mathematics	4	
	MPAC 201	Mechanical Drawing	2	4
	MPAC 202	Fluid Mechanics	4	4
	MPAC 203	Thermodynamics 2	6	4
	MTU1007	The crimes of the Baath regime in Iraq	2	-
Stage Two Second course	MPAC205	Refrigeration and Air Conditioning -1	6	4
	MPAC206	Strength of Materials	4	4
	MTU1005	Computer Applications 1	2	2
	UOW 208	English 2	3	
	MAPAC 209	Arabic 2	2	-
	MPAC210	Summer Training 1	-	-
Third Stage	ENG 300	Engineering and Numerical Analysis	4	-
	MPAC301	Computer Applications 2	2	2
	MPAC302	Theory of Machine and Vibrations	4	4
	MPAC303	Heat Transfer	4	4
	MPAC304	Air Conditioning and Refrigeration systems	4	4
	MPAC305	Mechanical Design	4	4
	MPAC306	Maintenance of Air Conditioning systems	2	6
	MPAC308	Air Conditioning systems Drawing	2	6
	MPAC309	Electrical and Electronic Engineering	4	2
	MPAC310	Summer Training 2	-	-

7. Program Description

Fourth Stage	MPAC 400	**Project**	-	8
	MPAC401	**Air Conditioning System Design**	6	4
	MPAC402	**Power Plants**	4	4
	MPAC403	**Computer Applications 3**	2	2
	MPAC404	**Industrial Engineering Management**	3	-
	MPAC405	**Refrigeration Systems**	6	4
	MPAC406	**Renewable Energy**	4	4
	MTU1008	**Professional Ethics**	2	-
	MPAC407	**English 4**	3	-
	MPAC409	**Control and Measurements**	4	4

8. Expected Learning Outcomes for the Program

Knowledge

Learning Outcomes (1)	• Maintenance of electrical, electronic and mechanical systems that are part of air conditioning systems • Identification of mechanical failures in air conditioning systems in accordance with the principles of thermodynamic operation using electronic diagnostic devices. • Improving energy consumption mechanisms in air conditioning and air quality systems, in response to national and international environmental quality standards. • Participate in production systems in the air conditioning industry in pursuit of resource optimization in manufacturing processes. • Air conditioner manufacturing processes through the use of existing technology to manufacture air conditioner parts. • Development of air conditioning system design projects, using various programs for estimating heat load. • Implementation of quality and environmental standards in air conditioning cooling operations, within the framework of national and international control plans. • Implementation of programs included in engineering drawings and drawings of air conditioning ducts and systems. • Developing the use of renewable energy in air conditioning systems. Appropriately interpret and communicate technical texts in the mother tongue and in English for use in the field of refrigeration and air conditioning engineering.

Skills	
Learning Outcomes (2)	4 Installation and operation of air conditioning and freezing Learning Outcomes systems. (2) 5 – Management of maintenance and repair complexes for various air conditioning and freezing systems and units. 6 – Dealing with modern inspection and diagnostic devices and equipment in the field of competence. 7- The possibility of developing air conditioning and freezing systems and achieving specific goals 8- The ability to make updates to improve the performance of air conditioning and freezing units 9- The ability to conduct corrective calculations for the manufacture of devices and systems in the field of specialization
Values	
Learning Outcomes (3) and (4)	Learning Outcomes (1) Group/Team Leadership 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. Learning Outcomes (2) Private Professional Development Graduates will be able to make their own decisions, plan and solve problems, and stay up-to-date on professional matters.

9. Teaching and learning Strategies

There are many teaching and learning methods used in the Refrigeration and Air Conditioning Engineering Department, the most important of which are theoretical and practical lectures. Using computer programs in various refrigeration and air conditioning specialties, discussion and dialogue, and scientific trips, discussion groups on specific topics, theoretical and practical student research, office activities, which helps students reach the following results:

1- The engineering ability to distinguish between correct information and incorrect information.

2- Ease of scientific formulation and ease of correction.

3- The ability to memorize and guess.

4- The ability to link engineering concepts, principles and instructions.

5- The ability to recall, link, and interpret.

6- The ability to link theoretical information to the process and what happens at the workplace.

10. Evaluation Method

A- Midterm and final exams.

B- Short exams (Quiz).

C- Writing Scientific Reports.

D- Homework.

H- Scientific Seminars.

C- Graduation Project Discussion Committees.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements / Skill (if applicable)	Number of the teaching staff	
	General	Special		Staff	Lecturer
Assistant Teacher / Hassan Taleb Hashem	Mechanical Engineering	Power Mechanics		1	
Assistant Teacher Dr. Mohamed Hassan Abboud	Mechanical Engineering	Thermodynamics		1	
Instructor / Ehab Omar Abbas	Mechanical Engineering	Air Conditioning and Refrigeration Machines and Equipment		1	
Assistant Teacher / Zainab Abdul Karim Salem	Mechanical Engineering	Thermodynamics		1	
Instructor / Ali Hammoudi Al-Wazir	Mechanical Engineering	Motion Systems Engineering Technology		1	
Lecturer Dr. Muhammad Wahab Kazim	Mechanical Engineering	Thermodynamics		1	
Lecturer Dr. Uday Hussein Kadhim	Mechanical Engineering	Refrigeration and Air Conditioning Engineering		1	
Assistant Lecture/ Dr. Raouf Mohamed Rady	Mechanical Engineering	Thermodynamics		1	
Lecturer Dr. Hussein Salem Kitan	Production and Metallurgy	Smart Manufacturing Systems		1	
Assistant Teacher / Riyam Abdul Razzaq Salman	Mechanical Engineering	Applied Mechanics		1	
Assistant Teacher / Mustafa Abbas Abdul Hussein	Electromechanical engineering	Electromechanical Systems Engineering		1	

Assistant Teacher / Malik Naama Hawas	Mechanical Engineering	Applied Mechanics			1
Assistant Teacher / Nour El-Hoda Salam Ahmed	Computer Science	Artificial Intelligence		1	
Teacher / Ahmed Aliwi Samarmad	Mechanical Engineering	Thermodynamics			1
Assistant Teacher / Hussein Ali Jaafar	Electromechanical engineering	Electromechanical Systems Engineering			1
Assistant Teacher / Nour Abdel Karim	Mechanical Engineering	Applied Mechanics		1	
Teacher Doctor/ Salah Abdel Hadi	Sciences	Computers			1
Assistant Teacher / Rasoul Hamad Rashid	Mechanical Engineering	Thermodynamics			1
Teacher / Ali Muslim Abdul Mohsen	Mechanical Engineering	Thermodynamics			1
Assistant Teacher / Musa Ali Sakr	Private Law	Civil Law			1
Assistant Teacher / Amin Sami Amin	Mechanical Engineering	Thermodynamics			1

Professional Development

Mentoring new Faculty members

The Department of Refrigeration and Air Conditioning Technologies follows a structured orientation process for new, visiting, and prospective faculty members. This begins with a formal reception and introduction to the institution's policies, vision, and mission, followed by an overview of the department's administrative and academic structure. This is followed by introductory meetings with faculty and administrative staff, and the provision of an orientation guide detailing academic and educational procedures. Lecture schedules and study plans are also provided, along with orientation to the department's academic facilities and technical workshops. The process concludes with the appointment of an academic advisor or

coordinator to follow up on their adaptation and provide the necessary support during their initial period of joining.
Professional development of faculty members
The plan relies on developing faculty members' competencies through recurring programs that include workshops and training courses on effective teaching strategies, active learning, and e-learning. The plan enhances course design skills and content updates in line with labor market requirements, with a focus on developing tools for assessing and analyzing learning outcomes to improve the quality of education. The plan also includes activities for continuing professional development, such as conference attendance, scholarly publishing, and research collaborations. Implementation of this plan is monitored through periodic evaluations of faculty performance and the provision of constructive feedback that contributes to raising the academic and professional level within the institution.

12. Acceptance Criterion
A- Admission requirements to the college:
B- Adoption of admission requirements for students according to the instructions issued by the Ministry of Higher Education and Scientific Research (Central Admission)
C- To be medically fit for the specialization applied for
D- Admission requirements to the scientific department.
C- Selecting the student's desire from more than one desire arranged according to preference
H- High school graduation rate
K- The capacity of the scientific department.

13. The most important sources of information about the program
1. Sources approved by international universities
2. Twinning with Middle Technical University
3. Local trends
4. Market needs
5. Studies and surveys
6. Specialized seminars and workshops with beneficiaries

7. Internet (World Wide Web)

14. Program development plan
The focus in the Department of Refrigeration and Air Conditioning Engineering is on continuous improvement. The department always seeks to improve the scientific and administrative process and overcome all difficulties and obstacles that hinder the educational program by developing human resources to develop the personality. The following procedures explain the steps implemented or in the process of implementation in this field: 1. Continuous improvement and development of faculty members through training programs and workshops inside and outside the department and the university. 2. Increasing extracurricular activities such as holding conferences, scientific seminars, personal and sports creativity locally, regionally and internationally. 3. Encouraging faculty members to obtain the highest scientific and administrative ranks. 4. Providing specialized software in refrigeration and air conditioning engineering and the necessary computers for this, along with Internet lines, for all instructors.

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							
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				
√	√	√	√	√	√	√	√	√	√	√	√			√	√	Suport learning	Mathematics 1	MPAC100	First stage Semester 1
	√	√	√		√	√	√		√	√	√		√	√	√	Core learning	Engineering Drawing	MPAC101	
	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Workshops	MPAC102	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Core learning	Engineering Materials	MPAC103	
√	√	√	√													Suport learning	English 1	MTU1002	
	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Electrical Technology	MPAC107	First stage Semester 2
		√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Mechanics	MPAC108	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Core learning	Thermodynamics 1	MPAC109	

√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Basic learning	Humans Rights and Democracy	MTU1006	First stage Semester 2
√	√	√	√													Basic learning	Arabic 1	MTU1001	
			√			√	√			√	√				√	Essential learning	Computer principles	MTU1004	

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							
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				
√	√	√	√	√	√	√	√		√	√	√		√	√	√	Suport learning	Mathematics 2	MPAC200	Second stage Semester 1
		√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Mechanical Drawing	MPAC201	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Fluid Mechanics	MPAC202	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Core learning	Thermodynamics 2	MPAC203	
√	√	√	√	√	√	√	√					√	√	√	√	Suport learning	Baath Party Crimes in Iraq	MTU1007	

√	√	√	√	√	√	√	√		√	√	√	√	√	√	√		Air Conditioning & Cooling 1	MPAC20 5	Second stage Semester 2
√	√	√			√	√	√		√	√	√			√	√		Material resistance	MPAC206	
		√	√			√	√			√	√			√	√		Computer Applications 1	MPAC207	
√	√	√	√													Suport learning	English Language 2	MTU1005	
√	√	√	√													Basic learning	Arabic 2	MTU1009	

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 l 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							
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				
		√	√			√	√		√	√	√			√	√	Suport learning	Engineering and numerical analyzes	MPAC300	Third Stage Semester 1
		√	√	√	√	√	√		√	√	√		√	√	√	Suport learning	Computer Applications 1	MPAC301	
		√	√		√	√	√				√			√	√	Core learning	Theory of machines and vibrations	MPAC302	
√	√		√	√		√	√	√	√		√	√		√	√	Core learning	Heat transfer	MPAC303	
√		√	√	√	√		√		√	√		√	√		√	Core learning	Refrigeration and Air Conditioning -1	MPAC304	

√	√	√	√		√	√	√		√	√	√	√	√	√	√	Core learning	Mechanical Design	MPAC305	Third Stage Semester 2
√	√	√	√	√	√	√	√		√	√	√	√			√	Core learning	Maintenance of refrigeration and air conditioning devices	MPAC307	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Air Conditioning systems Drawings	MPAC308	
√	√	√	√	√	√	√	√		√	√	√		√	√	√	Core learning	Electrical and Electronic Engineering	MPAC311	

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							
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				
√	√	√			√	√			√	√			√			Core learning	Project	MPAC400	Fourth stage
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Air Conditioning System Design	MPAC401	
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Power Plants	MPAC402	
√	√	√	√	√	√	√	√			√	√	√	√	√	√	Suport learning	Computer Applications 4	MPAC403	
√	√	√	√	√	√	√	√		√	√	√		√	√	√	Suport learning	Industrial Engineering Management	MPAC404	

√	√	√	√												Suport learning	English Language 4	MTU1003	Fourth stage
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Refrigeration Systems	MPAC405
√	√	√	√	√	√	√	√		√	√	√				√	Core learning	Renewable Energy	MPAC406
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Basic learning	Professional Ethics	MTU1008
√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	Core learning	Control and Measurements	MPAC409