Aacademic Program Description Form

University Name: University of Warith AL-Anbiya

Faculty/Institute: College of Engineering

Scientific Department: Air Conditioning and Refrigeration Techniques Engineering.

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

Final Certificate Name: Bachelor of Air Conditioning and Refrigeration Techniques Engineering.

Academic Degree System: Semester System & Bologna Process

Description Preparation Date: 2024/12/1

File Completion Date: 2024/12/29

Signature:

Head of Department: Dr. Mohammed Hassan

Date: 5/2/2025

Signature:

Assistant Dean For Scientific Affairs: Dr.Hassan .T.Hashim

Date: 5/2/2025

The file is checked by: Dr. Salam Al-Rbeawi

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 5/2/2025

Signature:

Approval of the Dean

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

1. Program Vision

The faculty members of the Department of Refrigeration and Air Conditioning at the College of Engineering at Warith Al-Anbiya University work to provide high-quality technical education that makes the targeted return from the educational process more efficient and distinctive by developing technical capabilities, critical thinking skills, social and personal skills, and work values in an ever-changing environment in Refrigeration and Air Conditioning Engineering. To form a close working relationship between faculty members and students in an informal and caring atmosphere to be a technical leader and innovator in providing high-quality educational programs and services, in a highly competitive global high-tech environment.

2. Program Mission

The Refrigeration and Air Conditioning Engineering program is designed to provide students with the skills needed to improve their employability by preparing them to work 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 includes the design and maintenance of 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, ventilation and air conditioning systems.

Level I: introduces students to the basics of general mechanical engineering and is suitable for progression to all programs in the field of mechanical energy including thermal energy. In addition, students will be provided with 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- Preparing and graduating a technical engineering cadre that achieves the main technical and cognitive requirements to be a high-quality engineering and technical cadre in the field of refrigeration and air conditioning.

2- Establishing 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 calculating and analyzing thermal loads as well as in manufacturing, design, control and maintenance activities of related devices.

4- Organizing training and qualification courses by a competent cadre with the participation of department students to engage in the labor market.

5- Strengthening the scientific and administrative relationship with the corresponding scientific and engineering colleges as well as ministries, industrial companies and other relevant institutions regarding teaching needs, rehabilitation and development of education programs.

6- Developing and developing all the necessary scientific and administrative plans and curricula to achieve the above paragraphs as required and following up on the feedback for the work of the plan or curriculum department.

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)

Program Structure	Number of Courses	Credits hours	Percentage	Reviews
Institution Requirements	5	17		Basic course
College Requirements	7	44		Basic course
Department Requirements	30	136		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	17		Basic course

College Requirements	7	44		Basic course
Department Requirements	31	201		Basic Course
Summer Training	2 months			
Other				

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

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	
	UOW 104	English	3	
Stage one Second Course	MPAC106	Electrical Engineering	4	4
	ENG 107	Engineering Mechanics	6	
	MPAC108	Thermodynamics 1	6	4
	UOW 109	Humans Rights and Democracy	2	
	UOW 110	Arabic I	2	
	UOW 111	Computer principles	2	2
Stage Two First Course	MPAC 200	**Advanced Mathematics**	6	
	MPAC 201	**Mechanical Drawing**	2	6
	MPAC 202	**Fluid Mechanics**	4	4
	MPAC 203	**Thermodynamics 2**	6	4
	UOW 204	**The crimes of the Baath regime in Iraq**	2	
Stage Two Second course	MPAC205	**Fundamentals of Air Conditioning and Refrigeration**	6	4
	MPAC206	**Strength of Materials**	4	4
	MPAC207	**Matlab**	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**	1	2
	MPAC302	**Theory of Machine and Vibrations**	3	
	MPAC303	**Heat Transfer**	3	2
	MPAC304	**Air Conditioning and Refrigeration systems**	2	1
	MPAC305	**Mechanical Design**	3	
	MPAC307	**Maintenance of Air Conditioning systems**	1	3
	MPAC308	**English 3**	2	
	MPAC309	**Air Conditioning systems Drawing**	1	2
	MPAC311	**Electrical and Electronic Engineering**	3	2
	MPAC310	**Summer Training 2**	-	-
Fourth Stage	ENG 400	**Project**	6	
	MPAC401	**Air Conditioning System Design**	2	2
	MPAC402	**Power Plants**	3	2
	MPAC404	**Computer Applications 3**	1	2
	MPAC405	**Industrial Engineering Management**	3	
	MPAC406	**Refrigeration Systems**	3	2
	MPAC407	**Renewable Energy**	3	
	MPAC408	**Professional Ethics**	2	
	MPAC409	**English 4**	2	
	MPAC410	**Control and Measurements**	3	1

8. Expected Learning Outcomes for the Program

1- The ability to identify, formulate, and solve engineering problems by applying the principles of engineering, science, and mathematics

2- The ability to apply engineering design to produce solutions that meet specific needs while taking into account public health, safety, global, cultural, social, environmental, economic, and other factors appropriate to the specialty.

3- The ability to develop and conduct appropriate experiments, analyze and interpret data, and use engineering judgment to draw conclusions.

4- The ability to communicate effectively with a range of audiences

5- The ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must take into account the impact of engineering solutions in the global, economic, environmental, and social context

6- The ability to recognize the ongoing need to acquire new knowledge, select appropriate learning strategies, and apply this knowledge

7- The ability to work effectively in a team whose members together provide leadership, create an inclusive, collaborative environment, set goals, plan tasks, and achieve objectives

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
Lecturer	Mechanical Engineering	Air Conditioning and Freezing / power		1	
Lecturer Doctor	Mechanical Engineering	Fluid mechanics		1	
Lecture	Mechanical Engineering	Motion Systems Engineering		1	

Lecture Doctor	Mechanical Engineering	Power Mechanics		1	
Lecture Doctor	Mechanical Engineering	Refrigeration and Air Conditioning Engineering		1	
Assistant Professor Doctor	Mechanical Engineering	Power Mechanics		1	
Lecture Doctor	Industrial Engineering	Intelligent Manufacturing Systems		1	
Assistant Professor Doctor	Mechanical Engineering	Power Mechanics		1	
Assistant Lecture	Mechanical Engineering	Power Mechanics		2	
Assistant Lecture	Electrical Engineering	Electronics		1	
Assistant Lecture	Computer Science	Artificial Intelligence		1	
Assistant Lecturer	Mechanical Engineering	Applied Mechanics		1	
Lecturer	Mechanical Engineering	Power Mechanics			1
Assistant Professor, Doctor	Electrical and Electronics Engineering,	Communications Engineering			1
Assistant Lecture	Mechanical Engineering	Power Mechanics			2
Lecturer Doctor	Mechanical Engineering	Power Generation			1
Assistant Professor Doctor	Electromechanical Engineering	Energy Electromechanics			1

Lecture	Polymer Engineering	Applied Mechanics			1
Assistant Lecture	Environmental Engineering	Environmental Engineering			1
Assistant Professor, Doctor	Mechanical Engineering	Applied Mechanics			1
Assistant Professor, Doctor	Mechanical Engineering	Power Mechanics			1
Assistant Lecturer	Power Mechanics	Thermal Engineering Technology			1
Assistant Lecturer	Mechanical Engineering	Mechanical Engineering			1
Assistant Lecturer	Private Law	Civil Law			1

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.

Lecture	Polymer Engineering	Applied Mechanics			1
Assistant Lecture	Environmental Engineering	Environmental Engineering			1
Assistant Professor, Doctor	Mechanical Engineering	Applied Mechanics			1
Assistant Professor, Doctor	Mechanical Engineering	Power Mechanics			1
Assistant Lecturer	Power Mechanics	Thermal Engineering Technology			1
Assistant Lecturer	Mechanical Engineering	Mechanical Engineering			1
Assistant Lecturer	Private Law	Civil Law			1

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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.

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Lecture Doctor	Mechanical Engineering	Power Mechanics		1	
Lecture Doctor	Mechanical Engineering	Refrigeration and Air Conditioning Engineering		1	
Assistant Professor Doctor	Mechanical Engineering	Power Mechanics		1	
Lecture Doctor	Industrial Engineering	Intelligent Manufacturing Systems		1	
Assistant Professor Doctor	Mechanical Engineering	Power Mechanics		1	
Assistant Lecture	Mechanical Engineering	Power Mechanics		2	
Assistant Lecture	Electrical Engineering	Electronics		1	
Assistant Lecture	Computer Science	Artificial Intelligence		1	
Assistant Lecturer	Mechanical Engineering	Applied Mechanics		1	
Lecturer	Mechanical Engineering	Power Mechanics			1
Assistant Professor, Doctor	Electrical and Electronics Engineering,	Communications Engineering			1
Assistant Lecture	Mechanical Engineering	Power Mechanics			2
Lecturer Doctor	Mechanical Engineering	Power Generation			1
Assistant Professor Doctor	Electromechanical Engineering	Energy Electromechanics			1

Lecture Doctor	Mechanical Engineering	Power Mechanics		1	
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Lecturer	Mechanical Engineering	Power Mechanics			1
Assistant Professor, Doctor	Electrical and Electronics Engineering,	Communications Engineering			1
Assistant Lecture	Mechanical Engineering	Power Mechanics			2
Lecturer Doctor	Mechanical Engineering	Power Generation			1
Assistant Professor Doctor	Electromechanical Engineering	Energy Electromechanics			1

4. مواكبة التطور التكنولوجي:

- **تعزيز وعي الطالب بأحدث التطورات في المواد الهندسية وأساليب التنفيذ، مما يضمن التحديث المستمر للمعرفة والبقاء في طليعة الممارسات الهندسية الحديثة.**

القيم	
مخرجات 1	القدرة على التعرف على الحاجة المستمرة للمعرفة الإضافية وتحديد هذه المعرفة وتقييمها ودمجها وتطبيقها بشكل مناسب.
مخرجات 2	القدرة على العمل بفعالية ضمن فرق تحدد الأهداف، وتخطط للمهام، وتلتزم بالمواعيد النهائية، وتحلل المخاطر وعدم اليقين.

9. طرائق التعليم والتعلم

تتعدد طرائق التعليم والتعلم المستخدمة في فرع هندسة تقنيات التبريد والتكييف واهم هذه الطرق هي المحاضرة النظرية والعملية. استخدام برامج الحاسوب في مختلف اختصاصات التبريد والتكييف.
المناقشة والحوار و السفرات العلمية. الحلقات النقاشية لمواضيع معينة، بحوث الطلبة النظرية والعملية النشاطات المكتبية مما يساعد الطلبة في الوصول إلى النتائج التالية:

1- القدرة الهندسية على التمييز بين المعلومة الصحيحة والمعلومة الخطأ.
2- سهولة الصياغة العلمية وسهولة التصحيح.
3- القدرة على الحفظ والتخمين.
4- القدرة على ربط المفاهيم والمبادئ والتعليمات الهندسية.
5- القدرة على الاستدعاء، الربط، التفسير.
6- القدرة على ربط المعلومات النظرية بالعملية وما يجري في موقع العمل.

10.طرائق التقييم

أ- الامتحانات التحريرية.
ب- الامتحانات السريعة Quiz.
ت- كتابة التقارير العلمية.
ث- الواجبات البيتية.
ح- السمنرات العلمية.
ج- لجان مناقشة مشاريع التخرج.