Ministry of Higher Education and Scientific Research

Scientific Supervision and Evaluation Authority

Quality Assurance and Academic Accreditation Department

Program Description
University of Hillah
College of Engineering Technologies
Department of Refrigeration and Air Conditioning Engineering Technologies

2025-2026

University Name: University of Hillah

College / Institute: College of Engineering Technologies

Academic Department: Refrigeration and Air Conditioning Engineering

Academic or Professional Program Name: Bachelor of Engineering in Refrigeration **and** Air Conditioning Technology

Final Degree Awarded: Bachelor of Engineering in Refrigeration and Air Conditioning Technology

Study System: Bologna Process

Program Description Prepared On: 24-3-2026

File Completed On: 25-3-2026

Reviewed by Quality Assurance and University Performance Division

Name of Quality Assurance and University Performance Officer: Ali Hussein Ghalta

Date: 29-3-2026

Approved by the Dean

1. Vision

of the Department of Refrigeration and Air Conditioning Engineering at the University of Hilla aims to provide The academic body quality technical education that makes the expected outcomes of the educational process more efficient and distinguished by -high n nical skills, critical thinking abilities, social and personal skills, and work values in a constantly changing environment ideveloping tech mechanical engineering and alternating current engineering. The collaboration and teamwork among the department's academic, ical, and administrative staff enhance students' understanding of the program and improve their practical skills in a highly techn .tech global environment-competitive, high

Program Mission .٢

fields of refrigeration and air conditioning through advanced scientific To prepare distinguished technical engineering cadres in the curricula, modern applied laboratories, and practical research that serves the labor market and keeps pace with the latest .onal partnerships to achieve sustainable developmentdevelopments, while enhancing local, regional, and internati

2. Program Objectives

1. Prepare technical engineers with advanced knowledge and practical skills in diagnosing faults, operating, and maintaining .systems various types of refrigeration and air conditioning
2. Enable graduates to keep pace with rapid technological developments in refrigeration, air conditioning, and thermal .environment control, with the ability to employ modern technologies to enhance performance efficiency
3. implement, and manage refrigeration and air conditioning systems used in residential, commercial, ‹Qualify students to design .industrial, and medical buildings in accordance with international standards
4. d air conditioning systems, ensuring their Develop students' abilities to sustain, maintain, and calibrate refrigeration an .continuous operation at the highest levels of efficiency and reliability
5. Enhance graduates' skills in researching innovative alternatives and solutions for technical components, contributing to cost .performance improvement reduction and
6. Prepare personnel capable of planning and executing preventive and periodic maintenance using modern maintenance .management methods
7. ronmental protection when Raise students' awareness of the importance of occupational safety, energy efficiency, and envi .designing and operating refrigeration and air conditioning systems

3. Program Accreditation

The program does not have any accreditation

4. External Influences

utilizing Monitoring the latest developments in refrigeration and air conditioning, aligning curricula to meet labor market needs, and .international educational resources

5. Program Structure

Structure Program	Number of Courses	Credit Hours	%Percentage	Notes
Institutional Requirements				Core
College Requirements				Core
Department Requirements				Core
Summer Training	Second& Third			
Others				

Academic Program Objectives:

1. Prepare graduates to work as technical engineers in the field of refrigeration and air conditioning.
2. Provide graduates with the scientific and technical knowledge necessary to enter the workforce.
3. Equip graduates with sufficient knowledge to continue in academia and pursue higher degrees.
4. Provide graduates with the practical training required to work in the maintenance of all types of refrigeration and air conditioning systems through summer training courses during their studies.
5. Prepare graduates to work as installation and operation engineers for various refrigeration and air conditioning systems.
6. Qualify graduates to practice their profession with integrity and transparency, applying professional ethics through courses on related laws, such as labor law and the Engineers' Syndicate law, among others.

A. Cognitive Objectives

- Ability to analyze and break down the components of refrigeration and air conditioning systems.

- Ability to diagnose faults and operational problems in various refrigeration and air conditioning systems (residential, industrial, and commercial).
- Ability to find suitable technical and engineering solutions to faults and improve system efficiency.
- Ability to develop and implement preventive and corrective maintenance plans for refrigeration and air conditioning systems to ensure continuous operation and minimize failures.
- Ability to design and study the technical conditions and standards for installing and operating refrigeration and air conditioning systems in compliance with safety, quality, and energy efficiency standards.

A. Program Qualification Objectives:

- Prepare graduates capable of operating, maintaining, and diagnosing faults in various refrigeration and air conditioning systems.
- Enable graduates to design and implement refrigeration and air conditioning systems in accordance with environmental requirements, safety standards, and energy efficiency.
- Prepare qualified personnel to work in hospitals, factories, residential and commercial buildings through the management and operation of refrigeration and air conditioning systems.
- Equip graduates with the ability to use modern instruments and measurement and control tools specific to refrigeration and air conditioning systems.
- Qualify students to use modern engineering and technical software for thermal performance analysis and system design.
- Develop communication skills and the ability to work within a team on field projects or technical workshops.
- Prepare graduates to keep up with technological developments in refrigeration, air conditioning, and energy-efficient smart systems.

Teaching and Learning Methods:
Lectures, practical laboratories, scientific seminars, training courses, and specialized exhibitions in refrigeration and air conditioning systems.

Assessment Methods:
Daily quizzes, semester exams, attendance, laboratory reports, and annual evaluations.

B. Affective and Value Objectives:

1. Design, maintain, and supervise the installation of refrigeration and air conditioning systems.
2. Provide scientific and practical consultancy.

C. Personal Development Planning:

- Organize field visits to building projects, factories, central cooling stations, and specialized refrigeration and air conditioning laboratories.
- Participate in specialized exhibitions and conferences in refrigeration, air conditioning, and sustainable energy.
- Conduct training courses and applied workshops in collaboration with global and local manufacturers of refrigeration and air conditioning systems.
- Encourage students to engage in summer training within institutions and companies to enhance practical skills and link theoretical knowledge with application.

D. Admission Criteria:

- Graduates of the General Secondary Education – Science branch.
- Students graduating from technical and vocational institutes.
- Students graduating from industrial vocational preparatory schools.

Republic of Iraq - Ministry of Higher Education and Scientific Research

University of Hilla

Bachelor's degree in Air Conditioning and Refrigeration EngineeringTechnologies (First cycle)

Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr

Program Curriculum (2023 - 2024)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي

جامعة الحلة

بكالوريوس في هندسة تقنيات التبريد والتكييف (الدورة الاولى)

أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = 25 ساعة

المنهاج الدراسي للعام ٢٠٢٣-٢٠٢٤

كلية التقنيات الهندسية

UNIVERSITY OF HILLA

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGI	One	1	MPAC100	Mathematics	الرياضيات	English	6						3	87	113	200	8.00	S	
		2	MPAC101	Engineering Drawing	الرسم الهندسي	English	2		4				4	88	62	150	6.00	C	
		3	MPAC102	Workshops	المعامل	English			8				4	116	84	200	8.00	C	
		4	MPAC103	Engineering Materials	هندسة المواد	English	4						4	60	90	150	6.00	C	
		5	MTU1002	English 1	اللغة الانكليزية 1	English	3						3	45	5	50	2.00	S	
						Total	15	0	12	0	0	0	18	396	354	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGI	Tow	1	MPAC107	Electrical Engineering	هندسة كهربائية	English	4		2				4	88	87	175	7.00	C	
		2	MPAC108	Engineering Mechanics	الميكانيك الهندسي	English	4						3	59	141	200	8.00	C	
		3	MPAC109	Thermodynamics 1	الديناميك الحراري 1	English	6		4				4	144	56	200	8.00	C	
		4	MTU1006	Humans Rights and Democracy	حقوق الانسان والديمقراطية	Arabic	2						2	30	20	50	2.00	B	
		5	MTU1001	Arabic 1	اللغة العربية 1	Arabic	2						2	30	20	50	2.00	B	
		6	MTU1004	Computer principles	مبادىء الحاسوب	English	2		2				4	60	15	75	3.00	E	
		7	MPAC105	Matlab	ماتلاب	English	2		2				4	60	15	75	3.00	E	
						Total	22	0	10	0	0	0	23	471	354	825	33		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGII	Three	1	MPAC200	Advanced Mathematics	الرياضيات المتقدمة	English	4				1		4	74	76	150	6.00	S	MPAC100
		2	MPAC201	Mechanical Drawing	الرسم الميكانيكي	English	2		4				4	88	62	150	6.00	C	MPAC101
		3	MPAC202	Fluid Mechanics	ميكانيك الموائع	English	4		4				4	116	34	150	6.00	C	
		4	MPAC203	Thermodynamics 2	الديناميك الحراري 2	English	6		4		1		4	158	92	250	10.00	C	MPAC109
		5	MTU1007	Ba'th regeem crimes	جرائم حزب البعث	Arabic	2						2	30	20	50	2.00	S	
						Total	18	0	12	0	2	0	18	466	284	750	30		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGII	Four	1	MPAC205	Refrigeration and Air Conditioning -1	التبريد والتكييف-1	English	6		4				4	144	156	300	12.00	C	
		2	MPAC206	Strength of Materials	مقاومة مواد	English	4		4				4	116	159	275	11.00	C	MPAC108
		3	MTU1005	Computer Applications 1	تطبيقات الحاسوب 1	English	2		2				4	60	15	75	3.00	S	
		4	MTU1003	English 2	اللغة الانكليزية 2	English	3						2	44	6	50	2.00	S	MTU1002
		5	MTU1009	Arabic 2	اللغة العربية 2	Arabic	2						2	30	20	50	2.00	B	MTU1001
		6	MPAC210	Summer Training 1	التدريب الصيفي 1	Total	17	0	10	0	0	0	16	394	356	750	30		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGIII	Five	1	MPAC300	Engineering and Numerical Analysis	تحليلات عددية وهندسية	English	4						3	59	41	100	4.00	S	MPAC200
		2	MPAC301	Computer Applications 2	تطبيقات الحاسوب 2	English	2		2				4	60	15	75	3.00	S	
		3	MPAC302	Theory of Machine and Vibrations	نظرية مكائن واهتزازات	English	4		4				4	116	9	125	5.00	C	
		4	MPAC303	Heat Transfer	انتقال حرارة	English	4		4				4	116	84	200	8.00	C	
		5	MPAC304	Refrigeration and Air Conditioning -1	التبريد والتكييف -2	English	4		4				4	116	134	250	10.00	C	MPAC205
						Total	18	0	14	0	0	0	19	467	283	750	30		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Six	1	MPAC305	Mechanical Design	تصميم ميكانيكي	English	4		4				4	116	84	200	8.00	C	
		2	MPAC306	Maintenance of Air Conditioning syste	صيانة اجهزة تبريد وتكييف	English	2		6				4	116	84	200	8.00	C	
		4	MPAC308	Air Conditioning systems Drawing	رسم منظومات التبريد والتكييف	English	2		6				4	116	84	200	8.00	C	
		5	MPAC309	Electrical and Electronic Engineering	هندسة الكهرباء والالكترونيك	English	4		2				4	88	62	150	6.00	C	MPAC107
		6	MPAC310	Summer Training 2	التدريب الصيفي 2	English													
						Total	12	0	18	0	0	0	16	436	314	750	30		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGIV	Seven	1	MPAC400	Project	مشروع التخرج	English			8			1	3	129	21	150	6.00	C	
		2	MPAC401	Air Conditioning System Design	تصميم منظومات تكييف الهواء	English	6		4				4	144	106	250	10.00	C	MPAC304
		3	MPAC402	Power Plants	محطات توليد الطاقة	English	4		4				4	116	84	200	8.00	C	MPAC203
		5	MPAC403	Computer Applications 3	تطبيقات الحاسوب 3	English	2		2				4	60	15	75	3.00	S	
		6	MPAC404	Industrial Engineering Management	ادارة مشاريع هندسية	English	3						3	45	30	75	3.00	S	
						Total	13	0	18	0	0	1	18	494	256	750	30		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Eight	1	MPAC405	Refrigeration Systems	منظومات تجميد	English	6		4			1	4	158	142	300	12.00	C	MPAC304
		2	MPAC406	Renewable Energy	الطاقة المتجددة	English	4		4				4	116	134	250	10.00	C	
		3	MTU1008	Professional Ethics	اخلاقيات المهنة	English	2						2	30	20	50	2.00	B	
		5	MPAC409	Control and Measurements	سيطرة وقياسات	English	4		4				4	116	34	150	6.00	C	
						Total	16	0	12	0	0	1	14	420	330	750	30		
						Total	131	0	106	0	2	2	142	3544	2531	6075	243.0		Must be 240 ECTS

Note: The student should complete 4 weeks of Summer Internships to fullfil the requirements of the Bachelor's degree

Structured SWL (hr/w) type		
	CL	Class Lecture
	Lab	Laboratory
	Pr	Practical Training
	Tut	Tutorial
	Lect	Online lecture
	Sem	Seminar

Module type		
	B	Basic learning activities
	C	Core learning activity
	S	Suport or related learning activi
	E	Elective learning activity

SWL:	Student Workload
SSWL:	Structured SWL
USSWL:	Unstructured SWL

Note: Columns O, Q and R are progrmaed, protected and should not be edited