## Academic Program Description Form

**University Name: AL-Mustaqbal University**

**Faculty/Institute: College of Engineering and Engineering Techniques.**

**Scientific Department: Dept. of Mechanical Power Engineering Techniques with branch of air conditioning and refrigeration**

**Academic or Professional Program Name: Bachelor of Mechanical Power Engineering Techniques with branch of air conditioning and refrigeration**

**Final Certificate Name: Bachelor of Mechanical and Power Engineering Techniques**

**Academic System: Courses**

**Description Preparation Date: 15 / 09/ 2024**

**File Completion Date: 01 / 10/ 2025**

**Signature:**
Head of Department Name:
**Prof.Dr. Qusay Rasheed A. Amir**
Date: **12/4/2025**

**Signature:**
Scientific Associate Name:
**Dr. Ameen M. Al Juboori**
Date:**12/4/2025**

**The file is checked by:**

**Department of Quality Assurance and University Performance**

**Name of Director of Quality Assurance and University Performance Division:Dr. Zahraa Hashim Kareem**

**Date: 12/4/2025**

**Signature:**

**Approval of the Dean**

**Signature:**
Dean Name:
**Assist.Prof. Azher M.Abed**
Date:

# 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) .

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 ( annual) 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.

| 1. Program Vision |
| --- |
| Leadership in engineering sciences and their applications, technology transfer for the benefit of the local and global community, providing educational programs and technical services based on a spirit of competition and communication with the outside world. |
| 2. Program Mission |
| 1. Equipping the graduate with the ability to contribute effectively to community service and solve specialized industrial problems to advance the economic reality of the country.<br>2. Preparing graduates familiar with applied industrial experiences through the introduction of modern technological means in the curricula of the department. |
| 3. Program Objectives |
| 1. Equipping graduates with the ability to contribute effectively to serving the community and solving specialized industrial problems to promote the country's economic reality.<br>2. Graduating students who are knowledgeable in applied industrial experiences by incorporating modern technological means into the curriculum.<br>3. The Department of Air Conditioning and Refrigeration Engineering aims to qualify its graduates to become practical engineers with the capability to develop initial designs for air conditioning, refrigeration, and freezing systems, specifically, and mechanical devices in general. They should also be capable of executing, designing, and supervising the installation of various types of refrigeration systems.. |
| 4. Program Accreditation |
| -The program was applied for accreditation for the 2023-2024 academic year, but the upload mechanism was incorrect. |

-The required files for accreditation will be submitted on July 1 for the 2024-2025 academic year to the Supervision and Evaluation Authority/Iraqi National Council for Technical Engineering Program Accreditation

## 5. Other external influences

Middle Technical University/College of Engineering Technology, Baghdad, Northern Technical University/College of Engineering Technology, Mosul, Ministry of Electricity, Industrial Advisory Council, Energy Research Center, Ministry of Oil

## 6. Program Structure

| Program Structure | Number of Courses | **Credit hours** | Percentage | Reviews* |
|---|---|---|---|---|
| Institution Requirements | 9 | 20 | %١٢,٢٦ | |
| College Requirements | 2 | 11 | %٦,٧٤ | |
| Department Requirements | 31 | 163 | %٨٠,٩٨ | The curriculum is not courses |
| Summer Training | 2 | | | |
| Other | | | | |

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

## 7. Program Vision

| **Credit hours** | | **Name of the course or course** | **Course or course code** | **Year/level** |
|---|---|---|---|---|
| **practical** | **theoretical** | | | |
| - | 2 | Human Right& democracy | MU0211009 | First stage |
| 6 | - | Workshop | MU0211007 | |
| - | 3 | Mathematic-1 | MU0211002 | |
| 2 | 3 | Computer Application-1 | MU0211008 | |
| 3 | 1 | Enginnering Drawing & Descriptive Engineering | MU0211005 | |
| 1 | 2 | Mechanics | MU0211003 | |
| 1 | 2 | Electrical Technology | MU0211004 | |
| - | 2 | Engineering Materials | MU0211006 | |

| | | | | |
|---|---|---|---|---|
| 2 | 2 | Thermodynamics-1 | MU0211001 | |
| - | 1 | Arabic | MU02110010 | |
| - | 1 | English Language | MU02110011 | |
| 2 | 2 | Air-Condition and Refrigeration-1 | MU0212001 | Second stage |
| - | 2 | Baath Regime Crime | MU0212009 | |
| 1 | 2 | Thermodynamics2 | MU0212002 | |
| 2 | 3 | Fluid Mechanics | MU0212003 | |
| 1 | 2 | Strength of Materials | MU0212004 | |
| - | 3 | Mathematics-2 | MU0212005 | |
| 3 | - | Mechanical Drawing | MU0212006 | |
| 2 | 1 | Computer Applications-2 | MU0212007 | |
| - | 1 | English-2 | MU0212008 | |
| 1 | 2 | Heat Transfer | MU0213001 | The third stage |
| 2 | 3 | Engineering and Numerical Analyses | MU0213002 | |
| 2 | 1 | Air-Conditioning and Refrigeration2 | MU0213003 | |
| 1 | 2 | Theory of Machine and Vibration | MU0213004 | |
| - | 3 | Mechanical Design | MU0213005 | |
| 2 | 1 | Electrical and Electronic Engineering | MU0213006 | |
| 3 | - | Computer Applications3 | MU0213007 | |
| 2 | 1 | Air-Conditioning and Refrigeration Equipment Maintenance | MU0213008 | |
| 1 | 2 | Drawing of the Air-Conditioning and Refrigeration Systems | MU0213009 | |
| - | 1 | English-3 | MU02130010 | |
| 2 | 2 | Refrigeration Systems | MU0214001 | Fourth stage |
| 2 | 2 | Airconditioning System | MU0214002 | |
| 1 | 2 | Renewable Energy | MU0214003 | |
| 1 | 2 | Control circuits | MU0214004 | |
| - | 2 | Power Plants | MU0214005 | |
| - | 2 | Computer Applications4 | MU0214006 | |
| 2 | 1 | The Industrial Engineering | MU0214007 | |
| - | 1 | English-4 | MU0214008 | |
| - | 1 | Professional Ethics | MU0214009 | |

## 8. Expected learning outcomes of the program

| Knowledge | |
|---|---|
| A. Cognitive objectives | A1. The student is prepared to receive solid scientific material.<br>A2. The student learns how to benefit from linking topics with equations and solving them.<br>A3. The student learns how to apply what was taken from scientific materials. |

| | |
|---|---|
| | A4. Learn how to apply scientific aspects with the potential problems facing the mechanical engineer.<br>A5. Consolidating the scientific material correctly through taking exams.<br>A6. Activating the student's role in understanding and benefiting from the scientific material to the maximum extent. |
| Skills | |
| B. Program specific skill objectives | B1. Thinks in an engineering way based on a solid scientific basis.<br>B2. Works to solve obstacles in an intellectual way and according to the available data.<br>B3. Works as a team. |
| **Ethics** | |
| C. Emotional and value-based goals | A1. Adheres to the ethics of the educational institution.<br>A2. Works in a team spirit.<br>A3. Receives and accepts knowledge. |

## 9. Teaching and Learning Strategies

1 .Theoretical lectures.

2 .Scientific laboratories.

3 .Using data show.

4. Practical lectures.

5.Students participate in solving mathematical problems

6. Discuss and discuss vocabulary related to the topic

## 10. Evaluation methods

1. Practical exams
2. Daily theoretical exams.
3. Homework.
4. Final semester exams.
5. Seminars.

## 11. Faculty

Faculty Members

| Academic Rank | Specialization | Special Requirements/Skills | **Number** of the teaching staff |
|---|---|---|---|

| | | | (if applicable) | | | |
|---|---|---|---|---|---|---|
| | **General** | **S**pecial | | | **Staff** | **L**ect urer |
| Prof.Dr. Qusay Rasheed Abdulameer | Mechanical | Air Conditioning & Refrigeration | Head of Department | | √ | |
| Assit. Prof. Dr. Abdul Karim Abdul Wahab Ibrahim | Mechanical | Fluids | Lecturer | | √ | |
| Dr. Mahmoud Shaker Hassan | Mechanical | Internal Combustion Engines | Department Rapporteur | | √ | |
| Assit. Prof. Essam Mohey Mohammed | Mechanical | Therms | Lecturer | | √ | |
| Dr. Dhaa Radi | Mechanical | Therms | Lecturer | | √ | |
| Dr. Sami Mohsen Dakheenah Jabr Al-Nasrawi | Mechanical | Machines | Lecturer | | √ | |
| Dr. Hussein Kazem Halwas | Mechanical | Fluids & Therms | Lecturer | | √ | |
| M.S.c.Mohsen Aliwi Nasser | Mechanical | Air Conditioning & Refrigeration /Freezing | Lecturer | | √ | |
| M.S.c.Teeb Basim Abbas | Mechanical | Applied | Lecturer | | √ | |
| M.S.c. Ali Hassanein Mohsen | Electrical | Electrical Engineering | Lecturer | | | √ |
| M.S.c.Zahra Fakhri Hussein | Mechanical | Fluids & Therms | Lecturer | | | √ |
| M.S.c.Ali Ajami Falah Hussein Al-Nafai | computer Sciences | Computers | Lecturer | | √ | |
| Abdul Khaliq Abdul Karim | Mechanical | Agricultural Machinery | Lecturer | | √ | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Prof. Dr. Haider Kreidi Rashid | Mechanical | Power | Lecturer | | | √ |
| Prof. Dr. Salwan Obaid Waheed Khafaji | Mechanical | Applied | Lecturer | | | √ |
| M.S.c. Mustafa Raheem Jasem | Mechanical | Applied | Lecturer | | √ | |
| Prof. Dr. Issam Zuhair Fadel | Electrical | Applied | Lecturer | | | √ |
| M.S.c Hassin Ghanaem | Air Conditioning & Refrigeration/Freezing | | Lecturer | | √ | |
| M.S.c Fatima Al-Zahraa Adnan | Thermal mechanics | Renewable energy | Lecturer | | √ | |
| Dr.Mohammed M. Obeid | Material engineering | | Lecturer | | √ | |
| M.S.c Asma Mohammed Hamid | Mechanical | Renewable energy | Lecturer | | √ | |

## Professional Development

### Mentoring new faculty members

To orient new, visiting, full-time, and part-time faculty members, a structured process is followed to facilitate their integration and adaptation to the academic and administrative environment. This process typically includes the following steps

**Reception and Welcome:**

- New members are warmly welcomed and introduced to other colleagues in the department.
- A welcome package is provided, containing essential information about the university and the department.

**Orientation Session:**

- An orientation session is organized, including a detailed explanation of the university and
- department's history, as well as their vision, mission, and goals.
- An overview of the organizational structure of both the department and the university is also provided.

**Distribution of Guidance Materials:**

- Distribute brochures and guides containing academic and administrative policies, regulations, and schedules.
- Provide access to electronic resources such as the university website and the learning management system.

Campus Tour:

- Organize a campus tour to visit academic and administrative facilities, laboratories, and the library.

**Academic Orientation:**

- Hold meetings with academic advisors to clarify academic requirements, course curricula, and academic standards.
- Explain how to use e-learning systems and research tools.

**Administrative Support:**

- Provide information on administrative procedures such as obtaining a university ID card, registering in the system, and accessing health and social services.
- Introduce them to the procedures for submitting applications and the required documents for various processe.

**Career Guidance and Development:**

- Offer orientation sessions on available professional development opportunities such as training courses and workshops.
- Encourage participation in academic activities and scientific meetings.

**Evaluation and Follow-up:**

- Provide surveys or evaluation sessions to assess new members' satisfaction with the orientation process and identify areas for improvement.
- Offer continuous follow-up to provide necessary support and ensure proper adapation.

Professional development of faculty members

A comprehensive plan has been developed for the academic and professional development of faculty members with the aim of enhancing academic quality and improving teaching. performance. This plan includes several key aspects, such as teaching and learning strategies, assessment of learning outcomes, and professional development. Here is a brief overview of each of these aspects:

**Teaching and Learning Strategies:**

- nnovation in Teaching: Encourage the use of modern teaching methods such as blended learning, project-based learning, and active learning.
- Technology in Education: Promote the use of educational technology like e-learning

platforms, interactive teaching tools, and virtual simulations.

- Customized Learning: Design tailored educational programs that meet individual student needs, focusing on self-directed learning and skill development.

**2. Assessment of Learning Outcomes:**

- Diverse Assessment Methods: Utilize a variety of assessment methods such as written exams, presentations, projects, and practical reports.
- Constructive Feedback: Provide continuous and constructive feedback to students to improve their academic performance and develop their skills.
- Educational Data Analysis: Collect and analyze student performance data to identify strengths and weaknesses and make informed decisions to enhance the educational process.

Professional Development:

- Continuous Training Programs: Organize ongoing training courses and workshops for faculty in areas such as modern teaching techniques, scientific research, and academic leadership.
- Academic Exchange: Encourage faculty to participate in academic exchange programs and research visits to global academic institutions.
- Personal Development: Provide opportunities for faculty to develop their personal and professional skills through self-development programs, and participation in conferences and scientific seminars.

**4. Research Support:**

- Research Funding: Provide financial support and research grants to faculty for conducting scientific research and developing innovative research projects.
- Research Collaboration: Promote research collaboration between faculty members and researchers from other academic and industrial institutions.
- Research Publication: Support and encourage the publication of research in prestigious scientific journals and participation in international scientific conference

## 12. Acceptance Criterion

Students must have successfully passed the final exams with competitive grades according to the year of admission. The eligible students are graduates of:

- **Secondary Education / Applied Branch**
- **Industrial Secondary School**

The minimum requirements for applicants to the Department of Mechanical Power Techniques Engineering are as follows:

| Branch | Morning Study | Evening Study |
|---|---|---|
| **Scientific (Biological – Applied)** | 60 | 58 |
| **Industrial** | 60 | 58 |
| **Technical** | 62 | 60 |

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

**The university's official website:**

It contains comprehensive details about academic programs, curricula, admission requirements، and any new updates related to the college. It also provides information about faculty, facilities, and student services .

**Student Handbook:**

It serves as an important reference containing detailed information about academic programs, graduation requirements, academic policies, and available student services.

**Admissions and Registration Office:**

Prospective students can visit the Admissions Office to get direct information about academic programs, admission requirements, and the necessary documentation.

**Social Media:**

University accounts on social media platforms can be followed to receive the latest news and updates about academic programs and ongoing events at the college.

**Direct Contact with Faculty:**

Students can contact faculty members directly to obtain specific information about academic programs and various specialization

## 14. Program Development Plan

Reviewing the curricula to incorporate the latest technologies in the Department of Mechanical

Power Techniques Engineering /Air Conditioning and Refrigeration , including topics such as:

- **Air Conditioning and Refrigeration Systems:** Studying modern and effective systems for controlling temperature and humidity.
- **Sustainable Refrigeration Systems:** Reviewing innovations in the design of refrigeration systems that contribute to reducing environmental impact.
- **Smart Control Technology:** Exploring how artificial intelligence can be utilized to improve the performance of air conditioning and refrigeration systems.

**Enhancing Scientific Research and Infrastructure:**

Supporting scientific research by providing advanced resources and laboratories, and encouraging faculty members and students to innovate and publish in specialized fields.

**Developing Academic Staff and Partnerships:**

Enhancing the efficiency of faculty members through continuous training and participation in conferences, and building strategic partnerships with the medical and industrial sectors to enhance training and employment opportunities.

**Promoting Student Activities and Innovation:**

Supporting student clubs and activities that enhance skills and creativity, organizing student trips, competitions, and applied projects that encourage innovation.

| Program Skills Outline | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Required program Learning outcomes | | | | | | | | | | | |
| Year/Level | Course Code | Course Name | Basic or optional | Knowledge | | | | Skills | | | | Ethics | | | |
| | | | | A1 | A2 | A3 | A4 | B1 | B2 | B3 | B4 | C1 | C2 | C3 | C4 |
| First stage | MU0211002 | Mathematics | Basic | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| | MU0211005 | Engineering drawing | Basic | ✓ | | | | ✓ | ✓ | ✓ | | | | ✓ | ✓ |
| | MU0211007 | Laboratory | Basic | | | | | | ✓ | | | | | ✓ | |
| | MU0212006 | Engineering Materials | Basic | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| | MU02110011 | English Language-1 | optional | | | | | | | | | | | ✓ | |
| | MU0211004 | Electrical Engineering | Basic | | ✓ | ✓ | ✓ | | | ✓ | | ✓ | ✓ | | |
| | MU0211003 | Engineering Mechanics | Basic | ✓ | ✓ | | | | | | ✓ | | | ✓ | |
| | MU0211001 | Thermodynamics-1 | Basic | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MU0211009 | Human Rights and Democracy | optional | | | | ✓ | | | | | | | | |
| | MU02110010 | Arabic Language | optional | | | | | | | | | | | ✓ | |
| | MU0211008 | Computer Principles | optional | | | | | | ✓ | | | | | ✓ | |
| **Second stage** | MU0212005 | Advanced Mathematics | Basic | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | | ✓ |
| | MU0212006 | Mechanical Drawing | Basic | ✓ | | ✓ | ✓ | | | | | | ✓ | | |
| | MU0212003 | Fluid Mechanics | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ |
| | MU0212002 | Thermodynamics-2 | Basic | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| | MU0212001 | Air Conditioning and Refrigeration Basics | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| | MU0212004 | Strength of Materials | Basic | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| | MU0212007 | Computer Applications-2 | Basic | | | | | | | | | | ✓ | | ✓ |
| | MU0212008 | English -2 | optional | | | ✓ | | | | | ✓ | ✓ | | ✓ | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Third stage** | MU0213002 | Engineering and Numerical Analyses | Basic | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | | ✓ |
| | MU0213007 | Computer Applications 3 | Basic | ✓ | ✓ | | | ✓ | | ✓ | | | | | ✓ |
| | MU0213004 | Theory of Machine and Vibration | Basic | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| | MU0213001 | Heat Transfer | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ |
| | MU0213003 | Air-Conditioning and Refrigeration 2 | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ |
| | MU0213005 | Mechanical Design | Basic | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| | MU0213008 | Air-Conditioning and Refrigeration Equipment Maintenance | Basic | | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | MU02130010 | English-3 | optional | ✓ | | | | | ✓ | ✓ | | ✓ | | | |
| | MU0213009 | Drawing of the Air-Conditioning | Basic | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | ✓ |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | and Refrigeration Systems | | | | | | | | | | | | | |
| | MU0213006 | Electrical and Electronic Engineering | Basic | | ✓ | ✓ | ✓ | | | ✓ | | ✓ | ✓ | | |
| **Fourth stage** | MU02140010 | Graduation Project | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | MU0214002 | Air-conditioning System | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | MU0214005 | Power Plants | Basic | ✓ | ✓ | ✓ | | | | ✓ | | | | | |
| | MU0214006 | Computer Applications-3 | Basic | | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| | MU0214007 | The Industrial Engineering | Basic | ✓ | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | MU0214001 | Refrigeration Systems | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | MU0214003 | Renewable Energy | Basic | ✓ | ✓ | | | ✓ | | | | | | | ✓ |
| | MU0214009 | Professional Ethics | optional | | | | | | | | | | | ✓ | |
| | MU0214008 | English-4 | optional | | | | | | | | | | ✓ | | |
| | MU0214004 | Control circuits | Basic | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | | |