Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2026

Introduction:

The educational program is a structured set of courses designed to develop students' skills, preparing them for labor market requirements. This program is reviewed and evaluated annually through internal or external audit procedures.

The academic program description provides a summary of the program's content and its courses, outlining the skills students acquire in alignment with its academic objectives. This description is a fundamental component in obtaining program accreditation and is prepared by faculty members under the supervision of the department's scientific committees.

This guide includes updates to the academic description based on recent developments in the Iraqi educational system. It encompasses the description of traditional programs (semester-based, Courses) in addition to adopting the description of academic programs according to the Bologna Process, as stated in the directive of the Directorate of Studies No. T.M.3/2906 dated 3/5/2023.

In this context, we emphasize the importance of accurately documenting academic program and course descriptions to ensure the continuous improvement of the educational process.

Concepts and Terminology:

Academic Program Description: Provides a brief summary outlining the program's vision, mission, and objectives, including a precise description of the intended learning outcomes based on specific learning strategies.

Course Description: Highlights the key features of the course and the expected learning outcomes that students should achieve. This helps assess the extent of their benefit from available learning opportunities and is derived from the program description.

Program Vision: An ambitious depiction of the program's future, making it progressive, inspiring, realistic, and feasible.

Program Mission: Defines the objectives and activities required to achieve them while outlining the program's development paths and directions. **Program Objectives:** Statements describing what the program aims to accomplish within a specific timeframe. These objectives must be measurable and observable.

Curriculum Structure: Includes all courses within the academic program according to the adopted learning system (semester-based, annual, Bologna Process). It encompasses ministry, university, college, and department requirements, specifying the number of credit hours for each course.

Learning Outcomes: The knowledge, skills, and values that students acquire upon successfully completing the academic program. Learning outcomes must be defined for each course to align with the program's objectives.

Teaching and Learning Strategies: The methods employed by faculty members to enhance student learning. These include all in-class and extracurricular activities designed to achieve the desired learning outcomes.

Academic Program Description Form

University Name: University of Mosul
Faculty/Institute: College of Petroleum and Mining Engineering
Scientific Department: Department of Mining Engineering
Academic or Professional Program Name: Bachelor / Mining Engineering
Final Certificate Name: Bachelor of Engineering in Mining Engineering
Academic System: Bologna and Semester System
Description Preparation Date: 5 April 2026
File Completion Date: 12 April 2026

Signature:

Head of Department Name:
Dr. Ibrahim Adil Ibrahim Al-Hafidh

Date: 15/4/2026

Signature:

Dean Scientific Associate Name:
Dr. Muneef Mahjoob Mohammed

Date: 15/4/2026

كلية هندسة النفط والتعدين
قسم هندسة التعدين

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department: Sara Jamal Halata
Date: 2026/4/20
Signature:

جامعة الموصل
كلية هندسة النفط والتعدين
البريد الصادر

Approval of the Dean

Ma'an H. Abdullah
20/4/2026

1. Program Vision

The Department of Mining Engineering aspires to be one of the leading departments at both the national and international levels in preparing highly qualified and distinguished engineers, in line with up-to-date curricula and internationally recognized standards. This contributes to the execution of engineering projects required by the country, both now and in the future, in the fields of mineral extraction, beneficiation, and production.

The department is also committed to providing a modern educational, engineering, and research environment in mining engineering, while actively promoting scientific research in support of sustainable development and technological progress. In doing so, it aims to make a meaningful contribution to society, particularly in Nineveh Governorate and across Iraq as a whole.

2. Program Mission

1. Preparing qualified engineers to work in the field of mining.
2. Graduating students with outstanding capabilities to address current and future challenges related to the optimal utilization of minerals, as well as energy and raw material challenges.
3. Preparing specialized scientific staff and national expertise in mining engineering through postgraduate programs, in order to benefit from their knowledge and experience in serving the country and society.
4. Developing students' scientific thinking skills, enhancing their academic performance, and strengthening their ability to analyze and address real-world problems using advanced and constructive scientific methodologies.
5. Adopting and supporting students' creative and outstanding ideas, while promoting a culture of teamwork that contributes to the development of their innovative and collaborative skills.
6. Strengthening sustainable communication with department alumni by involving them in seminars, scientific conferences, and continuous education programs, thereby supporting knowledge exchange and improving both academic and professional performance.

3. Program Objectives

1. **Preparing Qualified Graduates in Mining Engineering**
   To prepare graduates with a strong scientific foundation and advanced engineering skills in mining engineering fields, enabling them to contribute effectively to meeting the country's social and economic development needs.
2. **Enabling Graduates in Engineering Analysis, Design, and Evaluation**
   To equip graduates with the ability to analyze, design, and evaluate mining facilities and projects using modern engineering tools, software, and/or physical modeling techniques.
3. **Developing Project Management and Problem-Solving Skills**
   To provide graduates with essential skills in engineering project management, problem-solving, and the preparation of technical reports related to mining projects.
4. **Promoting Lifelong Learning and Graduate Studies**
   To prepare graduates with the scientific background and skills necessary to pursue higher education and engage in continuous self-directed learning.
5. **Enhancing International Academic Collaboration and Openness**
   To develop collaborative relationships with relevant international academic and research institutions (universities and research centers) in order to exchange expertise and enhance the quality of education and scientific research.

4. Program Accreditation

The College of Petroleum and Mining Engineering, including the Mining Engineering Department, is committed to achieving the nine standards outlined in the Iraqi Council for Engineering Education Accreditation (ICAEE) guide.

5. Other external influences

College of Petroleum and Mining Engineering

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	20	9.2%	Essential
College Requirements	15	79	36.4%	
Department Requirements	24	118	54.4%	
Summer Training	Available			
Other				

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

7. Program Description

Year/Level		Course Code	Course Name	Credit Hours	
				Theoretical	Practical
First Level (Bologna Pathway)	Semester 1	DME111	Geology for Engineers	3	2
		DME112	Engineering drawing and AutoCAD	2	4
		DME113	Mathematics I	4	
		DME114	Engineering Mechanics	4	
		UOM1021	English Language	2	
		UOM1040	Democracy and Human Rights	2	
	Semester 2	DME121	Engineering Physics	3	2
		DME122	Fundamental of Mining Engineering	5	
		DME 123	Mathematics II	4	
		UOM103	Computer I	1	3
		DME125	Engineering Chemistry	2	2
		UOM1011	Arabic Language I	2	
Second Level (Bologna Pathway)	Semester 3	DME211	Mathematics III	4	
		DME222	Ore Exploration by Remote Sensing	5	
		DME213	Engineering Surveying	2	3
		DME214	Static Fluid Mechanics	2	2
		DME215	Hydrogeology	2	2
		DME216	Transportation and circulation of raw materials	4	
		UOM2022	English Language II	2	
		UOM2032	Computer II	3	
	Semester 4	DME221	Strength of Materials	6	
		DME223	Project Management for Mining	4	
		DME224	Dynamic Fluid Mechanics	2	2
		DME225	Thermodynamics	4	2
		DME226	Mathematics IV	4	
		UOM101	Arabic Language II	2	
		UOM2050	Baath Party crimes in Iraq	2	

Third Level (Bologna Pathway)	Semester 5	DME311	Applied Rock Mechanics	3	2
		DME312	Well Drilling Engineering	5	
		DME313	Surface Mines Engineering	3	3
		DME314	Geophysics	4	2
		DME315	Sulfur Operations	3	2
		DME316	Numerical and Engineering Analysis	4	
	Semester 6	DME321	Soil Mechanics	3	2
		DME322	Rock Drilling and Blasting	3	
		DME323	Underground Mines Engineering	5	
		DME324	Geochemistry	3	
		DME325	Numerical Analysis Programming	1	2
		DME326	Cement Technology	2	2
Fourth Stage / Annual System		ME 411	Computer Application in Mining Engineering	4	3
		ME 412	Environmental and safety of mines	6	
		ME 413	Economics and analysis of mining data	4	
		ME 514	Fundamentals of mining engineering and technology	4	2
		ME 415	Design of mine machinery	3	
		ME 416	Rock blasting	2	
		ME 417	Tunnel engineering	2	2
		ME 4112	Final Year Projects (annual)	5	

8. Expected learning outcomes of the program

Knowledge	
Knowledge objectives	A1- An ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics. (GOs 1) A2- An ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly. (GOs 6)
Skills	
Skills objectives	B1- An ability to produce engineering designs that meet desired needs within certain constraints by applying both analysis and synthesis in the design process. (GOs 2) B2- An ability to create and carry out proper measurement and tests with quality assurance, analyze and interpret results, and utilize engineering judgment to make inferences. (GOs 3) B3- An ability to skillfully communicate orally with a gathering of people and in writing with various managerial levels. (GOs 4)
Ethics	
Ethics objective	C1- An ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments taking into account the consequences in worldwide financial, ecological and societal considerations. (GOs 5)

	C2- An ability to work adequately on teams and to set up objectives, plan activities, meet due dates, and manage risk and uncertainty. (GOs 7)

9. Teaching and Learning Strategies

1. Theoretical lectures using PowerPoint
2. Discussion sessions
3. Laboratory experiments
4. Computer labs
5. Video lectures
6. Group assignments
7. Case studies
8. Remote learning
9. Field studies

10. Evaluation methods

- Quizzes, midterm, and final exams.
- Practical exams and homework assignments.
- Reports.
- Presentations the projects and research.

11.Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Geology	Sedimentology			1	
Professor	Mining Engineering	Tunnel Engineering			1	
Professor	Petroleum Engineering	Petroleum Engineering			1	
Professor	Chemical Engineering	Chemical Engineering			1	
Assistance Professor	Geology	Geophysics			1	
Assistance Professor	Geology	Geotechnic			1	
Assistance Professor	Mechanical Engineering	Thermal Power and Renewable Energy			1	
Lecturer	Dams and Water Resources Engineering	Fluids			1	
Lecturer	Chemistry	Industrial Chemistry			1	

Lecturer	Mechanical Engineering	Fluids			1	
Lecturer	Physics	Nuclear physics			1	
Lecturer	Applied geology	Engineering Geology			2	
Lecturer	Geology	Stratigraphy and Palaeontology			1	
Assistant lecturer	Mechanical Engineering	Applied Mechanics			1	
Assistant lecturer	Mechanical Engineering	Thermal Power			1	
Assistant lecturer	Mechanical Engineering	Production and Metallurgy			1	
Assistant lecturer	Civil Engineering	Structure			1	
Assistant lecturer	Civil Engineering	Soil Mechanics			1	
Assistant lecturer	Civil Engineering	Traffic and Transportation Engineering			1	
Assistant lecturer	Mechanical Engineering	Research and Operations			1	
Assistant lecturer	Geology	Geochemistry			1	
Assistant lecturer	Computer Engineering	Internet of Things			1	
Assistant lecturer	Geology	Sedimentology			1	

12.Professional Development

Mentoring new faculty members

The academic program of the Department of Mining Engineering is designed to enhance the comprehensive knowledge and skills of new faculty members in various educational fields. The program begins with a focus on equipping faculty members with the basic skills to manage their duties effectively. It then progresses to include the processes and procedures necessary to achieve targeted learning outcomes across various programs. To achieve these goals, the program includes the following main components:

1. Educational Courses: New faculty members participate in educational courses aimed at improving the quality of the educational process. These courses cover a range of topics, including training in teaching methods and teaching effective strategies for engaging students and delivering course content.

2. Modern Trends in University Teaching: Exploring innovative approaches to teaching and learning in higher education.
3. Student Assessment: Courses and workshops for new faculty members on the process of assessing student performance and understanding.
4. Exam Preparation: Strategies for preparing fair exams.
5. University Policies: Familiarize yourself with relevant laws, regulations, instructions, and e-learning platforms.
6. Continuous Assessment: Faculty members, both full-time and part-time, undergo continuous assessment to identify areas for development throughout their teaching careers. This process helps ensure that faculty members are continually improving and adapting to meet the evolving needs of students and the university.
7. Professional development opportunities: Faculty members are encouraged to participate in faculty development courses offered by the university's department or continuing education unit to enhance their skills and remain relevant. These courses provide opportunities to stay abreast of trends in teaching and learning and collaborate with colleagues.

Professional Development of Faculty Members

The faculty of the Mining Engineering Department has links with key ministries in Iraq, namely the Ministry of Higher Education and Scientific Research, the Ministry of Oil, and the Ministry of Industry. The department has organized numerous seminars over the past years under the supervision of the Ministry of Higher Education and Scientific Research. The topics of the seminars addressed challenges in modern technologies and methods in oil and mineral extraction, exploration, ore processing, and export operations. These links provide faculty members with practical experience.

In this context, the Continuing Education Committee of the Mining Engineering Department has organized numerous lectures and workshops for faculty members in various fields over the past three academic years, as follows:

1. Developing e-learning and teaching methods/ 7
2. Scientific publications/ 56

3. Academic accreditation/ 0
4. Various seminars in the field of petroleum and mining engineering/ 1
5. Participation in conferences, seminars, workshops, and training courses outside Iraq/ 3
6. Participation in conferences, seminars, workshops, and training courses inside Iraq/ 36

13.Acceptance Criterion

The Mining Engineering Department's admissions capacity is determined within the admissions plan and based on the department's admissions capacity. The Academic Committee determines the number of new students required and then sends it to the Deanship, then the University, and finally the Ministry for official approval. To be eligible for admission to the Mining Engineering Department at the undergraduate level, applicants must meet certain requirements. The admissions process is overseen by the Ministry of Higher Education and Scientific Research, which administers and assigns grades based on their high school grades. The following are some of the main requirements for student admission to government institutions and colleges:

1. Iraqi nationality and year of birth: Applicants must be Iraqi nationals.
2. Iraqi high school diploma: Applicants must have a certificate issued by an Iraqi high school accredited by the Ministry of Education.
3. Medical certificate: Applicants must submit a medical certificate to ensure they meet the necessary health requirements.
4. Full-time enrollment: Applicants must commit to being full-time students, dedicating their time to their studies in the department.
5. Not accepting continuation studies at another college.
6. Non-Iraqi (incoming) students who have obtained a certificate from an Iraqi high school are admitted according to the central admissions system.
7. Acceptance of the top 10% of technical institute graduates.
8. Admission of gifted students.

14.The most important information sources about the program

- University Guide
- College Website:

https://uomosul.edu.iq/en/petroleumengineering/

15. Program Development Plan

To enhance the quality of education, raise graduate outcomes, and meet the required competencies, the Department Council has decided to adopt the "Bologna System for Education." This system incorporates the European Credit Transfer and Accumulation System (ECTS) instead of the current system, in line with the department's commitment to continuous improvement. The new system will be implemented starting from 2023-2024. Adopting the Bologna Process is expected to achieve several benefits:

- Student-oriented learning: The system places the student at the center of the learning process, enhancing the overall educational system.
- Increased classroom interaction: Continuous interaction between faculty and students fosters a more dynamic learning environment.
- Focus on professional and practical skills: Emphasis is placed on acquiring practical skills relevant to professional development.
- Opportunity for continuous learning: Students will have the opportunity for continuous learning, assessment, and feedback.
- Semi-annual performance evaluation: The system allows for student performance evaluation twice a year, providing more comprehensive feedback.
- Deepening subject understanding: The system is expected to contribute to deepening student understanding of subject matter.

16.Program Skills Outcome

Year/ Level	Course Code	Course Name	Basic or optional	Required Program Learning outcomes						
				Knowledge		Skills			Ethics	
				A1	A2	B1	B2	B3	C1	C2
First Level (Bologna) Semester 1	DME111	Geology for Engineers I	Basic		●		●			
	DME112	Engineering drawing and AutoCAD	Basic	●		●				●
	DME113	Mathematics 1	Basic	●						
	DME114	Engineering Mechanics	Basic	●						
	UOM1021	English Language I	Basic					●		
	UOM1040	Democracy and Human Rights	Basic						●	
First Level (Bologna) Semester 2	DME121	Engineering Physics	Basic	●			●			
	DME122	Fundamentals of Mining Engineering	Basic		●					
	DME 123	Mathematics II	Basic	●						
	UOM103	Computer I	Basic		●		●			
	DME125	Engineering Chemistry	Basic	●			●			
	UOM1011	Arabic Language I	Basic					●		
Second Level (Bologna) Semester 3	DME211	Mathematics III	Basic	●						
	DME222	Ore Exploration by Remote Sensing	Basic	●			●			
	DME213	Engineering Surveying	Basic	●			●			●
	DME214	Static Fluid Mechanics	Basic	●			●			●
	DME215	Hydrogeology	Basic	●			●			
	DME216	Transportation and circulation of raw materials	Basic		●				●	
	UOM2022	English Language II	Basic					●		
	UOM2032	Computer II	Basic		●		●			
Second Level (Bologna) Semester 4	DME221	Strength of Materials	Basic	●			●			
	DME223	Project Management for Mining	Basic		●			●	●	●
	DME224	Dynamic Fluid Mechanics	Basic	●			●			●
	DME225	Thermodynamics	Basic	●			●			
	DME226	Mathematics IV	Basic	●				●		
	UOM101	Arabic Language II	Basic					●		

	UOM2050	Baath Party crimes in Iraq	Basic						●	
Third Level (Bologna) Semester 5	DME311	Applied Rock Mechanics	Basic	●		●				
	DME312	Well Drilling Engineering	Basic	●				●		
	DME313	Surface Mines Engineering	Basic	●				●		
	DME314	Geophysics	Basic	●		●				
	DME315	Sulfur Operations	Basic	●			●		●	
	DME316	Numerical and Engineering Analysis	Basic	●						
Third Level (Bologna) Semester 6	DME321	Soil Mechanics	Basic	●			●			●
	DME322	Rock Drilling and Blasting	Basic	●			●			
	DME323	Underground Mines Engineering	Basic	●			●			
	DME324	Geochemistry	Basic	●		●				
	DME325	Numerical Analysis Programming	Basic		●		●		●	
	DME326	Cement Technology	Basic	●		●				
Fourth Year	ME 411	Computer Application in Mining Engineering	Basic	●		●				
	ME 412	Environmental and safety of mines	Basic	●					●	
	ME 413	Economics and analysis of mining data	Basic		●				●	
	ME 514	Fundamentals of mining engineering and technology	Basic		●		●			
	ME 415	Design of mine machinery	Basic		●			●	●	
	ME 416	Rock blasting	Basic	●				●	●	
	ME 417	Tunnel engineering	Basic	●			●			
	ME 4112	Final Year Projects (annual)	Basic	●	●	●	●	●	●	●