

University of Mosul

جامعة الموصل



First Cycle – Bachelor's degree (B.Sc.) – Mining Engineering

بكالوريوس هندسة التعدين



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1. Mission & Vision Statement

Vision Statement

The mining engineering academic staff of the Mining Engineering Division at the University of Mosul believes that students come to understand the discipline of mining through a combination of coursework, laboratory experiences, research, and fieldwork. The variety of instructional methods leads students to a balanced understanding of the engineering and scientific methods used by engineers to make observations, develop insights, and design mines to extract minerals and hydrocarbons from the ground. Small class sizes within the mining engineering program foster a close working relationship between academic staff and students in an informal and nurturing atmosphere.

Mission Statement

The mining engineering academic staff pursues a multifaceted charge at the University of Mosul. The Program seeks to provide all mining engineering students with fundamental knowledge of mining engineering, as well as a deeper understanding of a selected focus area within the petroleum and mining engineering and sciences. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work in field mining specializing in metallic or non-metallic or to pursue advanced degrees in petroleum and mining engineering. The mining engineering program also provides the necessary fundamental knowledge of mining, drilling, extraction, and geo-technique, as well as supports the Petroleum Engineering, Environmental Studies degree, and the Associate of Science degree in engineering geology. In addition, mining engineering courses provide a key laboratory science experience for those students seeking to complete the general education requirements.

2. Program Specification

Program code:	BSc-DME	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Mining Engineering is a wonderfully wide-ranging subject and is well-equipped to deliver. The emphasis of the program is the whole ground materials to which everything is related, be it the minerals, rocks, soil, and deposits that form raw materials in an earth's crust. The degree is popular for some, it's the breadth of the subject that appeals, for others it's a path to specialization. All students have the opportunity to transfer onto our specialist degrees in minerals physics, minerals chemistry, organic chemistry, and engineering drawing at the end of the first year.

Level 1 exposes students to the fundamentals of mining engineering, suitable for progression to all programs within the petroleum and mining program group. Program-specific core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. The University mining engineering graduate is therefore trained to appreciate how research informs engineering, according to the University and School Mission statements.

At Levels 2, 3, and 4 students are free to choose more than half of their module credits with the proviso a range of modules are selected that reflect the geological processes of minerals deposition, exploration, mining management, and extraction to ensure the breadth of knowledge expected of a graduate with a mining engineering. This allows students to develop their own wide-ranging interests in mining. Decisions on what to study are made with input from personal tutors.

The research ethos is developed and fostered from the start via practical, which are either embedded in lecture modules or taught in dedicated practical modules, research seminars, and tutorials. There is a compulsory field course in Level 1, which students must pass in order to progress into Level 2, and optional field courses in Levels 2, 3, and 4. At Level 4 all students carry out an independent research project, which may be a credit library or data analysis project, or a credit field or laboratory-based project.

Academic tutorials are held at Levels 1 and 2 with the same tutor, who is also the personal tutor, providing continuity and progressive guidance. Level 1 and 2 tutorials include a number of workshops to teach skills, e.g. library use and presentation skills, followed by assessed exercises, e.g. essays and talks, as opportunities to practice these skills in a subject-specific context.

International years and Industrial placements are also offered and individual needs are discussed with the appropriate tutor and accommodated wherever possible.

3. Program Objectives

1. To provide a comprehensive education in mining engineering that stresses scientific reasoning and problem-solving across the spectrum of disciplines within geology and engineering.
2. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry-level jobs in any area of mining engineering.
3. To provide extensive hands-on training in mathematics, statistical analysis, computer applications, laboratory skills, and field techniques.
4. To provide thorough training in written and oral communication of scientific information.
5. To enrich students with opportunities for alternative education in the area of mining engineering through undergraduate research, internships, and study-abroad.

1. Student Learning Outcomes

Mining engineering is the study of geological processes, mineral origin, exploration, ore extraction, ore processing, ore transportation, mining technology, and mining management. Graduates obtain information on tectonic, sedimentology, structural geology, soil and rock mechanics, rock blasting engineering, mining engineering, and tunnel engineering to utilize basic knowledge toward realizing broader concepts. The Department offers a Bachelor of Engineering in petroleum and mining with a concentration in mining engineering and a minor in Secondary Education that leads to a Public Instruction License. Additionally, the Department offers courses to a large number of students from other departments and supports pre-professional programs. The mining engineering curriculum and experiences are designed to prepare students, in part, for entry into engineering programs, graduate studies, industrial, petroleum careers, and education.

Outcome 1

Identification of Complex Relationships

Graduates will be able to illustrate the structure and distribution of ore, rocks, and minerals components and explain how they interact in the rock cycle.

Outcome 2

Oral and Written Communication

Graduates will be able to formally communicate the results of geological and engineering investigations using both oral and written communication skills.

Outcome 3

Laboratory and Field Studies

Graduates will be able to perform laboratory experiments and field studies, by using scientific equipment and computer technology while observing appropriate safety protocols.

Outcome 4

Scientific Knowledge

Graduates will be able to demonstrate a balanced concept of how scientific knowledge develops, including the historical development of foundational theories and laws and the nature of science.

Outcome 5**Data Analyses**

Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses.

Outcome 6**Critical Thinking**

Graduates will be able to use critical thinking and problem-solving skills to develop a research project and/or paper.

2. Academic Staff

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3. Credits, Grading and GPA

Credits

The University of Mosul is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
A number of decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program's total ECTS.

CGPA of a 4-year B.Sc. degree:

$$\text{CGPA} = [(1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots] / 240$$

4. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME111	Geology for Engineers	78	97	7.00	C	
ME112	Engineering Drawing and AutoCad	93	82	7.00	B	
ME113	Applied Mathematics	78	72	6.00	B	
ME114	Engineering Mechanics	63	87	6.00	B	
ME115	English Language	33	17	2.00	B	
ME116	Democracy and human rights	31	19	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME121	Engineering physics	78	72	6.00	B	
ME122	Petroleum Geology	78	72	6.00	C	DME111
ME123	Numerical and Engineering Analyses	63	87	6.00	B	
ME124	MS Office and Internet	63	62	5.00	B	
ME125	Engineering Chemistry	63	62	5.00	B	
ME126	Scientific English Language	33	17	2.00	B	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME211	Geochemistry of ores	93	57	6.00	C	DME121
ME212	Soil Mechanics	78	72	6.00	S	DME215
ME213	Engineering Surveying	78	47	5.00	S	
ME214	Static Fluid Mechanics	63	37	4.00	B	
ME215	Hydrogeology	63	62	5.00	S	DME212

ME216	Transportation and circulation of raw materials	48	52	4.00	C	DME123
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Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME221	Strength of Materials	63	37	4.00	B	
ME222	Ore and Oil Exploration by Remote Sensing	78	72	6.00	C	DME211
ME223	Project Management for Mining	63	62	5.00	C	
ME224	Dynamic Fluid Mechanics	63	37	4.00	B	DME214
ME225	Thermodynamics	63	62	5.00	B	
ME226	Numerical Analysis Programming	78	72	6.00	B	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME311	Applied Rock Mechanics	63	87	6.00	C	DME212
ME312	Well Drilling Engineering I	48	77	5.00	C	DME311
ME313	Well Logging	78	72	6.00	C	DME122
ME314	Petroleum Production Engineering II	48	52	4.00	C	
ME315	Rock blasting Engineering	48	52	4.00	C	DME311
ME316	Heat Transfer	78	47	5.00	B	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME321	Design of Petroleum and Mining Equipment	78	72	6.00	C	DME226
ME322	Well Drilling Engineering II	48	77	5.00	C	DME312
ME323	Environment and Safety of Mines	78	72	6.00	C	DME223
ME324	Petroleum Production Engineering II	48	52	4.00	C	DME314
ME325	Petroleum and Gas Transport and Exchange	48	52	4.00	C	DME321

ME326	Building Stones and Sustainability	63	62	5.00	C	DME311
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Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME411	Geographical Information System GIS	63	62	5.00	B	DME222
ME412	Surface Mines Engineering	93	57	6.00	C	DME311
ME413	Mechanical Excavation of Rock	63	62	5.00	C	DME311
ME414	Computer Applications in Mining and Metallurgy	78	72	6.00	C	DME226
ME415	Well Test	78	72	6.00	C	DME324
ME416	Graduate Project I	33	17	2.00	B	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ME421	Clay Minerals Technology	63	87	6.00	C	DME211
ME422	Underground Mines Engineering	78	72	6.00	C	DME311
ME423	Applied Raw Materials Processing	93	57	6.00	C	DME211
ME424	Mineral Resources Evaluation	48	52	4.00	C	DME211
ME425	Tunnels engineering	63	87	6.00	C	DME222
ME426	Graduate Project II	33	17	2.00	B	

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