



Course Specification

Diploma

Course Title: Mining and Quarrying Geology

Course Code: APMQ3215

Program: Mining and Quarrying

Department: Diploma Department

College: The Applied College

Institution: Umm Al-Qura University

Version: 1

Last Revision Date: 20 February 2025



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A. General information about the course:

1. Course Identification

1. Credit hours: (2)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

**3. Level/year at which this course is offered: (2)
(2nd. Level)**

4. Course General Description:

Mining: Definition of mining parameters, Mine access, Development mining vs. production mining, Ventilation, Ground support, Stop and retreat vs. stop and fill, Mining methods, Ore removal, Deepest mines, ultimate pit, open pit, waste disposal, engineering aspects and construction, drilling and blasting, mining opening and development, methods of shaft sinking, tunneling, elements of rock mechanics and the support of mining excavations, transportation in mines, ventilation, ore dressing.

The module provides the participants with necessary aspects to understand the main processes and methods of the construction industry. Rock material production for bounded and unbounded products is in focus (quarrying and mobile plants) including drilling and blasting, crushing and screening, load and hauling. The basics of environmental, health and safety aspects of quarrying are covered. Operational aspects of rock material aggregates production are covered to a level that facilitates basic optimization from both technical and economical perspectives. During the module visits to stationary quarries and mobile plants will be accomplished in order to demonstrate chosen parts of the theoretical content in real practice. A visit to a major road construction project is also included. Objectives (expected results of study and acquired competences).

Quarrying: Geologic history applied to quarry sites, Selection of quarry sites, Uses of stones (dimension stone, crushed stone, manufacturing stone), Urgency, Accessibility, Ease of quarrying, Overburden, Location, Drainage, Jointing(Strike and Dip), Waste disposal, Space for equipments and buildings.

5. Pre-requirements for this course (if any):

APMQ1201 & APMQ221

6. Co-requisites for this course (if any):

None

7. Course Main Objective(s):



Understand the rock material production for bounded and unbounded products is in focus (quarrying and mobile plants) including drilling and blasting, crushing and screening, load and hauling.

Understand the basics of environmental, health and safety aspects of quarrying are covered.

Recognize Operational aspects of rock material aggregates production are covered to a level that facilitates basic optimization from both technical and economical perspectives.

visits to stationary quarries and mobile plants will be accomplished in order to demonstrate chosen parts of the theoretical content in real practice.

Build a strong understanding of geological concepts

Strengthen their ability to analyze and interpret geological data

Advance their careers by acquiring specialized knowledge in mining geology, and Enhance their decision-making skills in mining operations.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	





4.	Tutorial	
5.	Others (specify)	
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

1.0	Knowledge and understanding			
1.1	Understand the rock material production for bounded and unbounded products is in focus (quarrying and mobile plants) including drilling and blasting, crushing and screening, load and hauling.	K1	Lectures and Interactive Discussions	Written Exams (Mid-Term and Final Exams), Quizzes.
1.2	Understand the basics of environmental, health and safety aspects of quarrying are covered.	K2	Lectures and Interactive Discussions	Written Exams (Mid-Term and Final Exams), Quizzes.
1.3	Recognize Operational aspects of rock material aggregates production are covered to a level that facilitates basic optimization from both technical and economical perspectives.	K4	Lectures and Interactive Discussions	Written Exams (Mid-Term and Final Exams), Quizzes.
1.4	visits to stationary quarries and mobile plants will be accomplished in order to demonstrate chosen parts of the theoretical content in real practice.	K5	Lectures and Interactive Discussions	Written Exams (Mid-Term and Final Exams), Quizzes.
1.5	An knowledge of geological principles for optimizing resource extraction and enhancing operational decision-making.	K6	Lectures and Interactive Discussions	Written Exams (Mid-Term and Final Exams), Quizzes.
2.0	Skills			
2.1	Build a strong understanding of geological concepts	S1	Interactive Discussions	Written Exams (Mid-Term and Final Exams), Quizzes
2.2	Strengthen their ability to analyze and interpret geological data	S2	Interactive Discussions	Written Exams (Mid-Term and Final Exams), Quizzes
3.2	Advance their careers by acquiring specialized knowledge in mining geology, and Enhance their decision-making skills in mining operations.	S3	Interactive Discussions	Written Exams (Mid-Term and Final Exams),
3.0	Values, autonomy, and responsibility			
3.1	Apply Knowledge to Mining and Resource Assessment, environmental	V1	Individual and Group Presentations	Presentations





	verification of mining activities, rehabilitation of mines and quarries.			

C. Course Content

No	List of Topics	Contact Hours
1.	The difference between mining and quarrying.	2
2.	The Quarrying Process and produce.	2
3.	Mine Development and Lifecycle.	2
4.	Mining Techniques.	2
5.	Surface Mining.	2
6.	Open-Pit Mining, and Materials extracted from it.	2
7.	Underground Mining.	2
8.	Mining Industry.	2
9.	Geologic history applied to quarry sites.	2
10.	Selection of quarry sites.	2
11.	Drilling and blasting, mining opening and development.	2
12.	Methods of shaft sinking, tunneling.	2
13.	Types of Quarries.	2
14.	Tools for mineral resources exploration.	2
15.	GIS for Mineral Explorationists, Geospatial and Geoenvironmental Engineers.	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	5	10
2.	Mid-Term Exam	8	20
3.	Presentations	12	10
4.	Homework	All weeks	10
5.	Final Exam	16	50

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	The Elements of Mining and Quarrying, Clement le Neve Foster C. Griffin, limited, 1903 – 321
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Supportive References	<ul style="list-style-type: none"> • Mining and Quarrying in the Ancient Andes: Sociopolitical, Economic and Symbolic Dimensions edited by Nicholas Tripcevich and Kevin J. Vaughn Springer, 2013, pp. 353.
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
Technology equipment (projector, smart board, software)	Data show
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty	Direct (project, HW, Quiz, midterm and final exam)
Effectiveness of Students assessment	Students	Indirect (Student Survey)
Quality of learning resources	Program Coordinator	Direct analysis
The extent to which CLOs have been achieved	Program Coordinator	Direct analysis
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851110214476/195605
DATE	18/2/1447

