University of Mosul
جامعة الموصل

First Cycle – Bachelor's Degree (B.Sc.) - Mining Engineering
بكالوريوس - هندسة تعدين

Table of Contents

1. Overview

This catalogue is about the courses (modules) given by the program of Mining Engineering to gain the Bachelor of Science degree. The program delivers (39) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامة

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج هندسة التعدين للحصول على درجة بكالوريوس علوم. يقدم البرنامج (39) مادة دراسية، مع (6000) إجمالي ساعات حمل الطالب و ٢٤٠ إجما يل وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2025-2026

Module 1

Code	Course/Module Title	ECTS	Semester
DME111	Geology for Engineers	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	3	78	97
Description			
The module "Geology for Engineers" is designed to introduce engineering students to the fundamental principles of geology and its relevance to engineering projects. The module covers various topics including the composition and classification of rocks and minerals, geological processes such as weathering and erosion, and the formation of geological structures. Students learn about the properties of different rock types, their behavior under load, and how geological factors can impact engineering projects such as foundation design, slope stability, and tunneling. The module also explores geotechnical investigations, site characterization, and the use of geological maps and models for engineering purposes. Practical exercises and fieldwork provide students with hands-on experience in applying geology to engineering projects. By the end of the module, students gain a solid understanding of geology and its significance in engineering, enabling them to make informed decisions and mitigate geotechnical risks in their future careers.			

Module 2

Code	Course/Module Title	ECTS	Semester
DME112	Engineering Drawing and AutoCad	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	4	93	82
Description			
The module "Engineering Drawing and AutoCAD" aims to provide engineering students with the necessary skills to effectively communicate and document engineering designs using traditional engineering drawing techniques and computer-aided design software, specifically AutoCAD. The module covers both theoretical and practical aspects of engineering drawing. In the theoretical component, students learn about the principles of orthographic projection, isometric drawing, dimensioning, and tolerancing. They also gain knowledge of standard engineering drawing conventions, symbols, and notation. The practical component focuses on developing proficiency in using AutoCAD, a widely-used software for creating technical drawings. Students learn how to navigate the AutoCAD interface, create and modify geometric shapes, apply annotations and dimensions, and generate accurate 2D drawings. Throughout the module, students work on hands-on assignments and projects to apply their knowledge and skills in real-world engineering design scenarios. They learn to interpret engineering drawings, create detailed technical drawings, and effectively communicate their design intent.			

Module 3

Code	Course/Module Title	ECTS	Semester
DME113	Mathematics I	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	3	63	87
Description			
The “Mathematics I” course is designed to equip engineering students with the mathematical tools and techniques required to solve engineering problems. The course covers a broad range of mathematical topics and their applications in engineering. Students learn the fundamental concepts of calculus, including differentiation and integration, and their applications in solving engineering problems such as optimization, rates of change, and curve sketching. The course also introduces linear algebra, with emphasis on matrix operations, systems of linear equations, and vector spaces, which are essential for solving problems related to linear transformations, determinants, and eigenvalues. In addition, the course presents differential equations and their applications in modeling and analyzing engineering systems. Students learn techniques for solving ordinary differential equations and gain an understanding of their role in engineering applications. Throughout the course, students engage in problem-solving exercises, mathematical modeling projects, and computer simulations to apply mathematical concepts to practical engineering scenarios. The course aims to develop students’ critical thinking, problem-solving, and mathematical modeling skills, enabling them to effectively address engineering challenges using mathematical tools and techniques.			

Module 4

Code	Course/Module Title	ECTS	Semester
DME114	Engineering Mechanics	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
Engineering Mechanics is a fundamental module that explores the principles and applications of mechanics in engineering. It covers topics such as statics and dynamics, equilibrium of forces, analysis of structures, and motion of particles and rigid bodies. The module emphasizes problem-solving techniques and the understanding of forces, moments, and their effects on various engineering systems. Students learn to analyze and design structures and machines, applying concepts of mechanics to real-world scenarios. Through theoretical study, mathematical modeling, and practical experiments, students develop skills in analyzing and predicting the behavior of engineering systems, laying a strong foundation for further studies in engineering disciplines.			

Module 5

Code	Course/Module Title	ECTS	Semester
UOM1021	English Language I	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	33	17
Description			
The English Language for Engineers module is designed to enhance language skills specific to engineering professionals. It focuses on technical vocabulary, effective communication, and writing skills necessary for successful collaboration and presentation of engineering concepts. The module covers topics such as scientific reports, technical documentation, and oral presentations, equipping students with the ability to articulate complex ideas clearly and concisely. Additionally, it provides practical exercises to develop reading comprehension, listening skills, and critical thinking in engineering contexts. By the end of the module, students will have improved their linguistic proficiency and acquired the language tools required to excel in their engineering careers.			

Module 6

Code	Course/Module Title	ECTS	Semester
UOM1040	Democracy and human rights	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	31	19
Description			
The Human Rights and Democracy module provides an in-depth exploration of the principles, theories, and practices surrounding human rights and democratic governance. It examines the historical development of human rights and their universal application in contemporary societies. The module explores topics such as civil and political rights, economic and social rights, gender equality, minority rights, and the right to development. It also delves into the foundations of democracy, including rule of law, transparency, accountability, and citizen participation. Through case studies, debates, and interactive discussions, students analyze the challenges and dilemmas faced in promoting and protecting human rights within democratic frameworks. The module encourages critical thinking, ethical reasoning, and understanding of the complexities involved in balancing rights and responsibilities. By the end of the module, students will have gained a comprehensive understanding of human rights and democracy and their significance in fostering inclusive, just, and participatory societies. They will be equipped to engage in informed discussions and contribute to the advancement of human rights and democratic values.			

Module 7

Code	Course/Module Title	ECTS	Semester
DME121	Engineering Physics	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	72
Description			
In this subject, the student studies the nature of solids by knowing the atomic structure of solids and how to distribute electrons at nuclear levels, due to their importance in understanding the type of matter, and also studying the crystalline structure of solids and the way distribution of atoms align with each other to form solids, especially semiconductors because of their importance in the photomask industry. The student studies the devices and how to connect them, the electrical circuits and how they work, and from them he gets to know the logic circuits that are of great importance in many control and control devices that the student will deal with in his life.			

Module 8

Code	Course/Module Title	ECTS	Semester
DME122	Fundamentals of Mining Engineering	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	0	78	72

Description

The Fundamentals of Mining Engineering course is an introductory subject designed to familiarize students with the basic concepts of the mining industry and its importance in economic and industrial development. The course introduces minerals and mineral ores, their formation, classification, and methods of exploration and prospecting. It also covers the general principles of ore extraction through both surface and underground mining methods, together with an overview of the equipment and machinery used in mining operations.

In addition, the course discusses the main stages of mining activities, from exploration to ore processing and transportation. Emphasis is placed on occupational safety, industrial health, and environmental protection during mining operations. The course aims to develop students' understanding of fundamental engineering terminology and the relationship between mining engineering and related fields such as geology, mechanics, and environmental engineering. It also provides students with a clear understanding of the mining engineer's role and prepares them for advanced specialized courses in mining engineering.

Module 9

Code	Course/Module Title	ECTS	Semester
DME123	Mathematics II	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	63	87

Description

The "Mathematics II" course is designed to further develop engineering students' mathematical knowledge and enhance their ability to apply advanced mathematical methods in analyzing and solving various engineering problems. The course covers advanced topics in calculus, including multiple integrals, partial differentiation, polar coordinates, sequences and series, and their engineering applications. It also focuses on ordinary and partial differential equations, their solution methods, and their use in modeling physical and engineering systems.

Students study vector analysis and its applications in motion, fluid mechanics, and engineering fields, in addition to mathematical transformations and numerical methods for solving complex problems. The course also emphasizes practical engineering applications through analytical exercises, applied problems, computer-based software activities, and mathematical simulations.

The course aims to develop students' analytical thinking, mathematical reasoning, and engineering modeling skills, enabling them to understand engineering phenomena and address technical challenges using accurate and advanced mathematical techniques.

Module 10

Code	Course/Module Title	ECTS	Semester
UOM1031	Computer I	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
1	3	63	62

Description

The goal of computer I course is to teach the student to define the basic rules of handling and managing a computer to help him complete projects, print things, prepare statistics and graphs, create presentations, design engineering drawings, etc.
With the emergence of the Internet as a means of communication available to all, it has become very necessary for the student to learn to use the computer, given the role of the Internet in many areas, including education, scientific research, trade, online marketing, correspondence, web pages, and electronic speech.
Among the cognitive objectives that the student will obtain after completing the course are:
A student's understanding of the material is measured by their ability to analyses and apply what they have learned practically on a computer. And that the assessment is done by presenting the material to the students in the laboratory and then applying what they learned from them, in addition to programming knowledge, knowledge of presentation creation programmers, PowerPoint, knowledge of applied programmers, knowledge of the Internet, how it is used in the field of scientific research, how to operate a computer, and dealing with the computer.

Module 11

Code	Course/Module Title	ECTS	Semester
DME124	Engineering Chemistry	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	62

Description

The Engineering Chemistry module provides an understanding of the fundamental principles and applications of chemistry in engineering disciplines. It covers topics such as chemical bonding, stoichiometry, thermodynamics, kinetics, and electrochemistry. Students learn how chemical concepts are applied in engineering processes, materials science, and environmental sustainability. The module emphasizes the practical aspects of chemistry, including laboratory experiments and analysis techniques. Through hands-on exercises and problem-solving, students develop skills in chemical analysis, material synthesis, and understanding chemical reactions in engineering contexts. By the end of the module, students will have gained a solid foundation in engineering chemistry, enabling them to apply chemical principles to solve engineering challenges and make informed decisions in their future careers.

Module 12

Code	Course/Module Title	ECTS	Semester
UOM1011	Arabic Language I	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	33	17
Description			
The Arabic Language I course is designed to provide students with the fundamental Arabic language skills required for effective and accurate communication in the academic environment. The course focuses on developing students' reading, writing, and linguistic expression skills while enhancing their ability to comprehend, analyze, and use language correctly. It covers the basics of Arabic grammar, morphology, and spelling, in addition to principles of written and oral expression and methods of constructing clear and well-organized sentences and paragraphs. The course also aims to enrich students' vocabulary and improve their ability to use scientific and academic terminology effectively. Furthermore, it includes practical exercises and language activities that help students develop their communication, critical thinking, and academic writing skills. The course ultimately prepares students to use the Arabic language proficiently in their university studies and various academic specializations.			

Module 13

Code	Course/Module Title	ECTS	Semester
DME211	Mathematics III	5	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	62
Description			
The "Mathematics III" course is designed to provide engineering students with advanced mathematical concepts and methods required for analyzing complex engineering problems and applying mathematical models in various engineering fields. The course covers advanced topics including vector analysis, line, surface, and volume integrals, as well as fundamental vector theorems such as Green's, Gauss's, and Stokes' theorems, in addition to partial differential equations and their solution methods. The course also focuses on applications of mathematical analysis in fluid mechanics, heat transfer, electromagnetics, and other engineering systems. Students are introduced to numerical methods and mathematical transformations, including Laplace and Fourier transforms, and their applications in signal and engineering systems analysis. Furthermore, the course includes applied exercises, analytical problems, and the use of computer software for mathematical modeling and simulation. The course aims to develop students' mathematical reasoning, engineering analysis, and logical thinking skills, enabling them to solve advanced engineering problems using accurate and efficient mathematical techniques.			

Module 14

Code	Course/Module Title	ECTS	Semester
DME212	Ore Exploration by Remote Sensing	5	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	3	78	47
Description			
The Remote Sensing for Ore Exploration course in Mining Engineering focuses on the application of remote sensing techniques for the identification and evaluation of mineral deposits. Students learn the principles and techniques of remote sensing, including aerial photography, satellite imagery, hyperspectral imaging, and thermal imaging. The course covers topics such as image interpretation, spectral analysis, and data processing algorithms related to ore and petroleum exploration. Students gain practical skills in using remote sensing data to identify potential resource targets, map geological features, and support decision-making in exploration projects. Furthermore, the course emphasizes the integration of remote sensing technologies with geological and mining investigations to improve exploration efficiency and accuracy. Through practical applications and analytical exercises, students develop the ability to analyze and interpret geospatial data for resource exploration purposes. The course equips students with the knowledge and technical skills required to enhance the effectiveness and precision of ore and petroleum exploration in mining engineering.			

Module 15

Code	Course/Module Title	ECTS	Semester
DME213	Engineering Surveying	4	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/sem)
2	3	78	22
Description			
The Engineering Surveying module focuses on the principles and techniques of surveying in engineering projects. Students learn how to measure, record, and analyze spatial data to support various engineering disciplines. This module covers topics such as land surveying, topographic mapping, construction surveying, and geodetic surveying. Students gain practical skills in using surveying instruments and software for precise measurements, control point establishment, and data analysis. The Engineering Surveying module equips students with the knowledge and tools to ensure accurate and reliable spatial information, essential for engineering design, construction, and maintenance projects.			

Module 16

Code	Course/Module Title	ECTS	Semester
DME214	Static Fluid Mechanics	4	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	37
Description			
Fluid mechanic is a since that study fluids (liquids and gases) either at rest fluid statics or in motion fluid dynamics. And their effects on other fluid or solids bodies. Moreover, it helps engineers to understand the behavior of fluid under various forces and at different atmospheric conditions, and to select the proper fluid for various applications. In fluid static the students studies the effect of fluid on the plan surface and curve surface and how much forces generates on the surfaces. In petroleum engineers this subject provides the knowledge necessary for to develop design methods for drilling, production, transport of oil and gas. Basic mechanical laws are applied for perfect fluid flow, Newtonian fluid, non-Newtonian fluid, and multiple phase flows. And it is important and useful to know properties of fluid like, density, viscosity, pressure, specific volume, specific weight, specific gravity.			

Module 17

Code	Course/Module Title	ECTS	Semester
DME215	Hydrogeology	4	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	37
Description			
The Hydrogeology module in mining engineering focuses on the study of groundwater systems and their interactions with mining operations. Students learn about the properties and behavior of subsurface water, aquifer characterization, groundwater flow, and contaminant transport. This module covers topics such as well drilling and construction, groundwater monitoring, and the design of dewatering systems. Students gain an understanding of how hydrogeological processes influence mine planning, slope stability, and water management strategies. The Hydrogeology module equips students with the knowledge and skills to assess and mitigate potential water-related challenges in mining projects.			

Module 18

Code	Course/Module Title	ECTS	Semester
DME216	Transportation and circulation of raw materials	3	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	27
Description			
The Transportation and Circulation of Raw Materials module in mining engineering focuses on the efficient movement of raw materials within mining operations. Students learn about various transportation methods, including conveyor systems, trucks, railroads, and pipelines, and their application in the mining industry. This module covers topics such as material handling, logistics management, and transportation network design. Students gain an understanding of the challenges associated with transporting bulk materials and develop strategies to optimize the flow of raw materials from extraction points to processing facilities. The module equips students with the knowledge and skills to ensure smooth and cost-effective transportation of raw materials in mining operations.			

Module 19

Code	Course/Module Title	ECTS	Semester
UOM2022	English Language II	2	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	33	17
Description			
The “English Language II” course is designed to further enhance students’ ability to use English in academic and engineering contexts at a more advanced and professional level. The course focuses on developing critical reading skills for scientific and engineering texts, including the analysis of main ideas and supporting details. It also strengthens academic writing skills such as technical report writing, summarizing, and scientific essay composition. In addition, the course addresses listening and comprehension skills in academic and professional settings, while improving speaking and oral presentation skills using accurate scientific and engineering terminology. Special emphasis is placed on expanding technical vocabulary in engineering and science disciplines and reinforcing the grammatical structures commonly used in academic writing. The course includes practical activities such as presentations, discussions of scientific topics, and short report writing tasks. Overall, it prepares students to use English effectively and confidently in their university studies and future professional careers.			

Module 20

Code	Course/Module Title	ECTS	Semester
UOM2032	Computer II	2	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	0	48	27
Description			
The "Computer II" course is designed to develop students' skills in using computers and advanced software applications relevant to engineering fields. The course focuses on strengthening students' understanding of basic programming concepts and their applications in solving engineering problems, including algorithms, simple data structures, and program development using a common programming language. It also covers the use of engineering software and computer applications in numerical analysis, data processing, engineering drawing, and simulation. In addition, the course addresses skills in working with spreadsheets, databases, and efficient information management. The course includes practical exercises and project-based activities aimed at enhancing logical thinking and problem-solving skills through computer-based solutions. Overall, it enables students to effectively utilize modern computing technologies in their engineering studies and to solve scientific problems accurately and efficiently.			

Module 21

Code	Course/Module Title	ECTS	Semester
DME221	Strength of Material	6	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	4	93	57
Description			
The "Strength of Materials" course in Mining Engineering focuses on the mechanical behavior and properties of materials used in mining operations. Students learn the concepts of stress, strain, and deformation, as well as the principles of elasticity, plasticity, and fracture mechanics. The course covers topics such as material testing, structural component analysis, and the design of mine support systems. Students also gain practical skills in evaluating the strength and stability of mining structures and equipment. Overall, the "Strength of Materials" course provides students with the essential knowledge required to ensure the safe and reliable performance of materials in mining engineering applications.			

Module 22

Code	Course/Module Title	ECTS	Semester
DME223	Project Management for Mining	5	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	62
Description			
Project management is the process by which a team of people successfully guide a project using the elements of planning, analyzing, directing, monitoring, problem solving, and communicating. They take an idea from the opportunity stage through development to the achievement of specific, established corporate objectives within set cost, schedule, and quality constraints. Project management is not a complex process. There are four basic steps to a successful project outcome: 1. Develop a definitive project scope and a project-specific execution plan. 2. Use qualified management personnel. 3. Create the project control mechanisms up-front (documents, tools, and procedures). 4. Control engineering, construction, and start-up activities during project execution.			

Module 23

Code	Course/Module Title	ECTS	Semester
DME224	Dynamic Fluid Mechanics	4	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	37
Description			
The Dynamic Fluid Mechanics module in mining engineering focuses on the study of fluid behavior in motion, particularly in the context of mining operations. Students learn about the principles and equations governing fluid flow, including the conservation of mass, momentum, and energy. This module covers topics such as flow in pipes and channels, flow measurement techniques, and the analysis of pressure losses and hydraulic systems. Students gain an understanding of how dynamic fluid mechanics principles apply to mining applications, such as pumping systems, slurry transport, and ventilation networks. The module equips students with the knowledge to analyze and optimize fluid flow in mining engineering projects.			

Module 24

Code	Course/Module Title	ECTS	Semester
DME225	Thermodynamics	6	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	4	93	57

Description

The module on thermodynamics provides students with a fundamental understanding of the principles and concepts governing the behavior of energy and its transformations in various systems. The module explores the relationships between heat, work, and energy, and their applications in engineering and science. Students will delve into the laws of thermodynamics, starting with the first law, which states that energy is conserved and can be neither created nor destroyed. They will learn about heat transfer mechanisms, including conduction, convection, and radiation, and how these processes affect energy transfer in different systems.

The module also covers the second law of thermodynamics, which introduces concepts such as entropy, irreversibility, and the directionality of processes. Students will explore the Carnot cycle and other thermodynamic cycles, as well as the principles behind refrigeration and heat pump systems. Additionally, the module addresses the properties of pure substances and their behavior under different thermodynamic processes, such as compression, expansion, and phase changes. Students will learn about equations of state, ideal gases, and the concept of thermodynamic equilibrium.

Throughout the module, students will engage in problem-solving exercises and practical applications to reinforce their understanding of thermodynamics. They will analyze thermodynamic systems, calculate heat and work transfers, and evaluate system efficiencies. The module aims to equip students with the necessary knowledge and skills to analyze and design energy systems, such as power plants, engines, and refrigeration systems while considering energy efficiency and sustainability.

Module 25

Code	Course/Module Title	ECTS	Semester
DME226	Mathematics IV	5	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	62

Description

The “Mathematics IV” course is designed to provide engineering students with advanced mathematical concepts and methods required for analyzing complex engineering systems and solving applied problems in various engineering disciplines. The course covers advanced topics including numerical analysis, approximate methods for solving algebraic and differential equations, complex analysis, and mathematical transformations such as Fourier and Laplace transforms with their engineering applications.

The course also focuses on mathematical models used in analyzing dynamic systems, vibrations, heat transfer, and fluid mechanics. Students learn to use computer software and numerical techniques for performing calculations, mathematical simulations, and accurate analysis of results.

In addition, the course includes applied exercises and mathematical projects aimed at developing analytical thinking, logical reasoning, and engineering problem-solving skills using modern mathematical techniques. Overall, the course prepares students to efficiently apply advanced mathematical tools in engineering analysis, scientific research, and practical applications.

Module 26

Code	Course/Module Title	ECTS	Semester
UOM2050	Crimes of the Ba'ath Party in Iraq	2	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	33	17
Description			
This course examines the crimes committed by the Ba'ath regime in Iraq, with a focus on their social, psychological, and environmental impacts. Students explore human rights violations, the use of internationally prohibited weapons, the documentation of mass graves, and the legacy of systematic repression. The course promotes critical thinking by linking these crimes to legal and ethical contexts as well as to the principles of human rights, while highlighting the role of democratic governance and transitional justice in addressing the atrocities committed during the previous era. Through lectures, interactive lessons, and classroom activities, students develop analytical skills and a deeper understanding of the concepts of justice and accountability in post-conflict societies. The course also contributes to building legal and humanitarian awareness that reinforces the values of freedom, dignity, and citizenship.			

Model 27

Code	Course/Module Title	ECTS	Semester
UOM2012	Arabic Langue II	2	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	33	17
Description			
This course enhances students' proficiency in Modern Standard Arabic by focusing on grammar, morphology, and literary rhetoric. Students develop accurate reading, proper speaking, and correct writing skills, with emphasis on eloquence, clarity, and effective expression. The course deepens students' understanding of grammatical structures, including the relationship between the subject and predicate, grammatical particles, and spelling rules. It also introduces selected works of prominent Abbasid-era poets such as Al-Mutanabbi, Abu Tammam, and Abu Firas Al-Hamdani, contributing to the development of literary appreciation and cultural awareness. Through seminars and interactive activities, students strengthen their communication skills, correct linguistic errors, and engage with the richness of Arabic heritage and expression. The course ultimately supports the establishment of strong linguistic foundations and a deeper appreciation of the beautiful of the Arabic language.			

Module 28

Code	Course/Module Title	ECTS	Semester
DME311	Applied Rock Mechanics	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	2	78	72
Description			
The module "Applied Rock Mechanics in Mining Engineering" focuses on the application of rock mechanics principles and techniques specifically in the context of mining operations. It explores the behavior of rocks under various mining conditions and emphasizes the design and stability analysis of mining excavations. Students learn about key concepts such as rock mass classification, stress distribution, and failure mechanisms in underground mining environments. The module covers topics such as ground support systems, rock reinforcement, mine design optimization, and ground control plans. Students gain practical skills in conducting rock mechanics testing, interpreting data, and using numerical modeling software to simulate and analyze rock behavior in mining scenarios. Additionally, the module addresses safety considerations and risk management in mining operations, including the assessment and mitigation of geotechnical hazards. By the end of the module, students are equipped with the knowledge and skills required to address the unique challenges and complexities of rock mechanics in the field of mining engineering.			

Module 29

Code	Course/Module Title	ECTS	Semester
DME312	Well Drilling Engineering	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	2	78	47
Description			
The Well Drilling Engineering module in mining engineering focuses on the principles and techniques of drilling wells in the context of mining operations. Students learn about various aspects of well drilling, including drilling methods, drilling equipment, and drilling fluids. This module covers topics such as drilling rig components, drilling bit selection, wellbore stability, and well control techniques. Students gain practical skills in planning and executing well drilling operations, ensuring efficient and safe extraction of resources from subsurface formations. The Well Drilling Engineering I module equips students with the knowledge and tools to successfully drill wells in mining engineering projects.			

Module 30

Code	Course/Module Title	ECTS	Semester
DME313	Surface Mines Engineering	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	3	93	57
Description			
The Surface Mining course focuses on the methods and techniques used for extracting mineral deposits located near the earth's surface in a safe and economical manners. The course covers mine design, reserve estimation, overburden removal, slope and haul road design, as well as drilling, loading, and transportation equipment. Students also learn about mine planning, production systems, safety procedures, and environmental impacts associated with surface mining operations. The course aims to provide students with the engineering knowledge and practical skills required to plan, operate, and manage surface mines efficiently according to modern technical and economic standards.			

Module 31

Code	Course/Module Title	ECTS	Semester
DME314	Geophysics	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	37
Description			
The "Geophysics" course is designed to provide Mining Engineering students with the fundamental principles of geophysical methods used in subsurface investigation and the exploration of mineral resources and natural reserves. The course examines the physical properties of rocks and minerals and the application of physics in interpreting geological structures and various Earth phenomena. It also covers the main geophysical methods, including seismic, gravity, magnetic, electrical, and radiometric techniques, and their applications in the exploration of mineral ores, groundwater, oil, and gas resources. The course emphasizes the principles of geophysical data acquisition, processing, and interpretation using scientific approaches and modern software tools. In addition, the course includes practical applications, field exercises, and laboratory activities that help students understand geophysical instruments and their operational principles. Overall, the course aims to develop students' analytical and scientific reasoning skills and enable them to effectively apply geophysical techniques in mining, geological, and engineering investigations.			

Module 32

Code	Course/Module Title	ECTS	Semester
DME315	Sulfur Operations	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	2	78	47
Description			
The "Sulfur Operations" course is designed to provide Mining Engineering students with fundamental knowledge related to sulfur ores, extraction methods, processing techniques, and industrial applications. The course covers the physical and chemical properties of sulfur, its types and natural sources, and the geological processes responsible for its formation in different environments. It also includes the study of sulfur extraction techniques from mines and underground deposits, as well as production, purification, and industrial processing operations. Students are introduced to the equipment and operational processes used in the sulfur industry. The course further emphasizes the industrial applications of sulfur and its derivatives in fertilizers, chemical industries, and energy production. In addition, the course addresses environmental and health considerations associated with sulfur production processes, including pollution control methods and occupational safety practices. Practical applications and analytical exercises are incorporated to help students understand sulfur-related industrial operations and evaluate their operational and economic efficiency, preparing them for careers in mining and chemical industries.			

Module 33

Code	Course/Module Title	ECTS	Semester
DME316	Numerical and Engineering Analysis	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	37
Description			
The Engineering Analysis Programming course aims to prepare students to understand and develop MATLAB programming skills and to apply them in various engineering applications. The course provides students with sufficient knowledge of the MATLAB environment and its use in programming numerical analysis problems, while enhancing their understanding of numerical methods and their implementation using computer-based tools. The course introduces the widely used engineering and mathematical analysis software MATLAB and provides students with practical knowledge of its applications in mathematical analysis and programming. Students learn how to use matrices, solve and plot complex mathematical equations, and create two- and three-dimensional graphics using MATLAB commands. The course also covers MATLAB windows and interfaces, variable input methods, numerical constants, and techniques for solving algebraic equations. In addition, the course familiarizes students with MATLAB functions used in numerical analysis, including solving nonlinear equations in one variable, finding maximum and minimum values of functions, numerical integration, and solving first-order differential equations.			

Module 34

Code	Course/Module Title	ECTS	Semester
DME321	Soil Mechanics	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	72
Description			
The Soil Mechanics module in mining engineering focuses on the study of soil properties and behavior in relation to mining operations. It covers topics such as soil classification, compaction, permeability, shear strength, and settlement analysis. Students learn how to assess and predict the stability of soil masses and slopes, design appropriate foundations for mining structures, and mitigate soil-related risks. This module equips students with the knowledge and skills to analyze and manage soil mechanics aspects in mining projects effectively.			

Module 35

Code	Course/Module Title	ECTS	Semester
DME322	Rock Drilling and Blasting	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	48	77
Description			
The module "Rock Drilling and Blasting Engineering in Mining Engineering" focuses on the principles, techniques, and applications of rock blasting in mining operations. This module covers the entire process of rock blasting, starting from blast design and planning to the safe execution of blasts. Students learn about the properties of explosive materials, blast initiation systems, and the effects of blasting on rock mass behavior. They gain an understanding of the factors influencing blast design, including rock properties, geology, and environmental considerations. The module also explores vibration and air overpressure control, fragmentation analysis, and blast optimization techniques. Students acquire practical skills in blast design, blast monitoring, and the use of specialized software for blast simulations. Safety aspects of rock blasting, including hazard identification, risk assessment, and blast management practices, are also emphasized. By the end of the module, students are equipped with the knowledge and skills to design and execute efficient and safe rock blasting operations in the mining industry.			

Module 36

Code	Course/Module Title	ECTS	Semester
DME323	Underground Mines Engineering	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	2	78	72
Description			
The Underground Mining course focuses on the engineering methods used to extract mineral deposits from beneath the earth's surface safely and efficiently. The course includes underground mining methods, tunnel and drift excavation, support system design, mine ventilation, water drainage, and underground transportation systems. Students are also introduced to rock stability issues, occupational safety, and environmental conditions related to underground mining operations. The course aims to provide students with the scientific knowledge and practical skills necessary to design, operate, and manage underground mines according to modern technical, economic, and safety standards.			

Module 37

Code	Course/Module Title	ECTS	Semester
DME324	Geochemistry	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	1	48	52
Description			
The "Geochemistry" course is designed to provide Mining Engineering students with fundamental knowledge of the Earth's chemical composition and the geochemical processes that control the distribution and behavior of elements in rocks, minerals, groundwater, and soils. The course covers the principles of geochemical cycles, element migration, thermodynamics, and geochemical reactions occurring in different geological environments. Students study the geochemistry of igneous, sedimentary, and metamorphic rocks, as well as the processes responsible for the formation of mineral ores and deposits. The course also introduces sampling and analytical techniques used in geochemical exploration and environmental assessment. Special emphasis is placed on the applications of geochemistry in mineral exploration, mining operations, environmental monitoring, and pollution control. The course includes practical exercises and laboratory analyses that help students interpret geochemical data and apply it in engineering contexts. Overall, the course aims to develop students' scientific and analytical skills for solving geological and mining-related problems using geochemical principles.			

Module 38

Code	Course/Module Title	ECTS	Semester
DME325	Numerical and Analysis Programing	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
1	2	48	52
Description			
The "Numerical Analysis Programming" course is designed to provide engineering students with fundamental skills in programming and numerical methods for solving engineering and scientific problems. The course covers programming concepts such as algorithm design, control structures, functions, and data processing using a common programming language. It also introduces numerical techniques for solving algebraic and nonlinear equations, numerical differentiation and integration, differential equations, interpolation, and statistical data analysis. Students learn to use MATLAB for implementing numerical applications, developing engineering algorithms, plotting and analyzing data, and performing mathematical and engineering simulations. The course includes practical exercises and programming projects that enhance logical thinking, mathematical analysis, and problem-solving skills. Overall, the course prepares students to effectively apply programming and numerical methods in engineering applications, simulations, and scientific research.			

Module 39

Code	Course/Module Title	ECTS	Semester
DME326	Cement Technology	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	62
Description			
The "Cement Technology" course is designed to provide Mining Engineering students with fundamental knowledge of the cement industry, including raw material properties and the industrial processes involved in cement production. The course covers the types of cement, its chemical and mineralogical composition, and the main raw materials such as limestone, clay, and gypsum, along with their preparation and processing methods. It also explains the stages of cement manufacturing, starting from crushing and grinding raw materials, followed by burning in rotary kilns, and ending with clinker grinding to produce final cement products. The course emphasizes the physical and chemical properties of cement and quality control methods to ensure compliance with industrial standards. In addition, it addresses environmental and health aspects of cement production, including emission reduction and pollution control techniques. Laboratory applications and practical exercises are included to help students understand operational processes, analyze production efficiency, and apply modern cement industry technologies.			

Module 40

Code	Course/Module Title	ECTS	Semester
DME411	Geographical Information System GIS	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	62
Description			
The Geographical Information System (GIS) module in mining engineering focuses on utilizing GIS technology to address the unique challenges and requirements of the mining industry. This module combines the principles of GIS with mining-specific data to provide a comprehensive understanding of the spatial aspects of mining operations. In the context of mining engineering, the GIS module facilitates the integration and analysis of geological data, mine planning and design, environmental assessments, and resource management. It enables the creation of detailed maps and visualizations that depict the distribution of mineral deposits, geological structures, and topographical features within a mining site. With GIS, mining engineers can analyze and interpret spatial data to optimize mine planning, identify potential hazards, and evaluate the impact of mining activities on the environment. It assists in decision-making processes related to site selection, infrastructure design, and resource allocation. Furthermore, the GIS module enables efficient data management, allowing mining engineers to store and organize large volumes of spatial data, including exploration data, drill hole data, and survey data. It also supports the integration of data from various sources, such as remote sensing and geophysical surveys, to enhance the accuracy and reliability of geological models and mining plans.			

Module 41

Code	Course/Module Title	ECTS	Semester
DME412	Design of Mining Equipment	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	3	93	57
Description			
Design of Mining Equipment explain: 1. Understanding of the principles and practices of designing mining equipment. 2. Ability to identify and apply appropriate design methods and techniques for different equipment types. 3. Knowledge of safety and environmental regulations related to the design of mining equipment. 4. Analytical skills in evaluating the performance and efficiency of equipment designs. 5. Ability to use relevant software and tools for designing and analyzing equipment. 6. Effective communication skills to present and explain equipment designs to different stakeholders in the industry. Ability to work in a team to develop effective solutions to complex equipment design problems.			

Module 42

Code	Course/Module Title	ECTS	Semester
DME413	Building Stones and Sustainability	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	2	63	62
Description			

Building stones, also known as natural stones are solid rocks that are used in construction for their durability, aesthetic appeal, and architectural value. Sustainability in the context of building stones refers to the environmental, social, and economic considerations associated with their extraction, production, use, and disposal. Here's a description of building stones and their sustainability aspects:

1- Types of Building Stones: Building stones come in various types, including granite, marble, limestone, sandstone, slate, and travertine.
2- Environmental Sustainability: Building stones can have both positive and negative environmental impacts. On the positive side, they are natural and abundant resources, reducing the need for energy-intensive manufacturing processes.
3- Resource Efficiency: Building stones have a long lifespan and can be reused or repurposed in construction, reducing the demand for new materials.
4- Energy Efficiency: While the extraction and processing of building stones require energy, the durability and thermal properties of stones can contribute to energy efficiency in buildings.

Module 43

Code	Course/Module Title	ECTS	Semester
DME414	Mining Economics	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	3	78	72
Description			

The “Mining Economics” course is designed to provide Mining Engineering students with fundamental economic and managerial concepts related to the mining industry and the evaluation of mining investment projects. The course covers principles of engineering economics, cost analysis, and the economic evaluation of mineral exploration, extraction, and processing operations.

It also examines factors affecting the economic feasibility of mining projects, including mineral prices, production costs, energy, transportation, labor, and taxation. The course focuses on mineral reserve evaluation, cash flow analysis, and economic indicators such as net present value (NPV), internal rate of return (IRR), and payback period.

In addition, students are introduced to risk management, economic sustainability, and financial planning in mining projects. Practical applications and case studies help students analyze economic data and make appropriate technical and financial decisions. Overall, the course prepares students to effectively evaluate and manage mining projects while integrating technical, economic, and environmental considerations.

Module 44

Code	Course/Module Title	ECTS	Semester
DME415	Environment and Safety of Mines	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	3	78	72
Description			

The description of this module include:
1- Developing an understanding of environmental hazards and their potential effects on human health and the environment.
2- Identifying various types of risks and hazards associated with mining operations, understanding the safety protocols, regulations, and best practices in the industry.
3- Developing skills in identifying, assessing, and managing risks associated with mining activities.
4- The ability to evaluate environmental impacts of mining, design effective mitigation strategies, and develop plans for emergency response and disaster management in mining operations.
The environment and safety of mines module may include topics such as mine safety legislation, safety hazards and risks in mining, mine ventilation and lighting, emergency preparedness and response, environmental management in mining, occupational health and hygiene, water management in mining, and community relations and social responsibility.

Module 45

Code	Course/Module Title	ECTS	Semester
DME416	Graduate Project I	2	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	17
Description			

The graduation project in Mining Engineering is an integrated applied work that aims to combine the engineering knowledge acquired by the student during their studies into a project that addresses a real mining problem or simulates a practical engineering project. The project typically involves selecting a topic such as designing an open-pit or underground mine, evaluating a mineral deposit, or preparing a feasibility study for a mining project.
It includes collecting and analyzing geological and engineering data, estimating mineral reserves, selecting the appropriate mining method, and designing different production stages. It also involves productivity calculations, equipment selection, and economic feasibility analysis in terms of costs and revenues. In addition, environmental and occupational safety aspects are addressed, along with methods to reduce the negative impacts of mining activities.
Engineering software such as AutoCAD, Surpac, and MATLAB is often used to support design and analysis. The project concludes with a detailed technical report and a presentation before a faculty committee to evaluate the student's ability in analysis, design, and problem-solving.
The graduation project aims to:
- Develop engineering analysis and design skills.
- Link theoretical knowledge with practical application.
- Prepare students for the labor market or postgraduate studies.
- Enhance research, problem-solving, and engineering decision-making skills.

Module 46

Code	Course/Module Title	ECTS	Semester
DME421	Mining Engineering Techniques	6	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87

Description

The "Mining Engineering Technologies" course is designed to provide Mining Engineering students with fundamental knowledge of modern technologies and methods used in mining operations. The course covers principles of mineral exploration and prospecting, surface and underground mining methods, and techniques of drilling, blasting, loading, and transportation. It also includes the study of modern mining machinery and equipment, their operation, maintenance, and methods for improving production efficiency.

The course emphasizes the use of digital technologies and engineering software in mine planning, data analysis, and mining operations management. Students are also introduced to modern technological applications in occupational safety, environmental monitoring, and sustainability in the mining sector.

Practical exercises and applied case studies help students develop analytical skills and technical decision-making abilities in mining operations. Overall, the course prepares students to effectively apply modern engineering technologies in the design, operation, and management of mining projects.

Module 47

Code	Course/Module Title	ECTS	Semester
DME422	Computer Applications in Mining and Metallurgy	6	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	72

Description

Computer applications in mining and metallurgy include:

Proficiency in using software tools for geological modelling, mine planning, and mineral processing simulations. Understanding of the role of computer applications in optimizing mining and metallurgy operations. Knowledge of the latest trends in mining and metallurgy technologies, such as artificial intelligence, machine learning, and automation. Familiarization with various computer software and tools used for data analysis, tracking, and visualization related to mining engineering and metallurgy. Development of critical thinking, problem solving, and decision-making skills related to mining and metallurgy.

The main programs importance in this module are:

1. Mine planning and design software like Ventsime, Surpac, MineSight, and Vulcan
2. Mining simulation software like Arena and PROMETHEE
3. Mining data analysis and visualization software like Microsoft Excell, Tableau and JMP.
4. 3D modeling software like AutoCAD and Ansys for mining infrastructure design and visualization
5. Metallurgical process control and optimization software like Ansys/ Optimization tool and VisioFroth.

Module 48

Code	Course/Module Title	ECTS	Semester
DME423	Applied Raw Materials Processing	6	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	93	57
Description			
Mineral processing is based on separation processes and is involved in performing and description of separations, as well as their analysis, evaluation, and comparison. Various terms are used in different countries for mineral processing. The goal of this curriculum is to present the bases of mineral processing with emphasis on treating all operations as separation processes having similar structure, which can be subjected to the same procedure of delineation, analysis, and evaluation. The present, most common treatment of mineral processing operations is by many stage like Comminution Classification Upgrading - flotation - gravity - magnetic - etc. Final treatment - drying - sampling - portioning - etc.			

Module 49

Code	Course/Module Title	ECTS	Semester
DME424	Mineral Resources Evaluation	4	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	52
Description			
Mineral resources evaluation is a systematic and comprehensive process used to assess the quantity, quality, and economic viability of mineral deposits. It involves the examination and analysis of geological, geochemical, and geophysical data to estimate the potential mineral resources within a given area Mineral resources refer to naturally occurring substances found in the Earth's crust that have economic value and are extracted for various purposes. These resources are typically formed over millions of years through geological processes such as deposition, heat, pressure, and chemical reactions. They can be classified into metallic minerals and non-metallic minerals. The evaluation process typically consists of the following steps:-Data Integration and Interpretation: The collected geological, geophysical, and geochemical data are integrated and interpreted to understand the subsurface geology and identify potential mineral resources. Mineral resources are extracted through mining techniques, which can vary depending on the type of deposit and its depth. Common methods include open-pit mining, underground mining, and placer mining.			

Module 50

Code	Course/Module Title	ECTS	Semester
DME425	Tunnels Engineering	6	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
The Tunnels Engineering module in mining engineering focuses on the design, construction, and management of underground tunnels and excavations in the mining industry. It equips students with the necessary knowledge and skills to plan, engineer, and maintain tunnels in various mining applications. This module covers a range of topics, including tunnel design principles, excavation methods, ground support systems, ventilation, and safety considerations specific to underground mining environments. It explores the geological and geotechnical factors influencing tunnel stability and durability, and the techniques for assessing and mitigating risks associated with tunneling. Students will learn about different tunneling methods, such as drill and blast, tunnel boring machines, and cut-and-cover techniques, and understand their suitability for different geological conditions and project requirements. They will also study the selection and installation of appropriate ground support systems, including bolts, rock anchors, and shotcrete.			

Module 51

Code	Course/Module Title	ECTS	Semester
DME426	Graduate Project II	2	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	17
Description			
The “Graduation Project II” in Mining Engineering is designed to provide students with the opportunity to integrate and apply the engineering knowledge and technical skills acquired throughout their academic studies to a comprehensive mining-related project. The course focuses on the preliminary stages of project development, including topic selection, literature review, problem identification, and collection of geological and engineering data relevant to mining operations. Students perform technical analyses related to mineral deposits, mining methods, production planning, equipment selection, and economic evaluation. The course also emphasizes environmental considerations, occupational safety, and sustainable mining practices. Engineering software such as AutoCAD, ANSYS, and MATLAB may be used to support modeling, design, and analysis tasks. The course aims to enhance students’ research abilities, analytical thinking, technical writing, and problem-solving skills in preparation for the final graduation project and professional engineering practice.			

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