دليل

كلية الهندسة

2020

قسم هندسة التعدين
Mining Engineering Department

أولا:- قوائم مسميات المقررات الدراسية للمرحلة العامة :- The 1st: List of General courses

العلوم الإنسانيةHumanities courses

Course No.	Course name	Pre request	Credits	اسم المقرر	رقم المقرر
		المتطلبات	الوحدات		
GH141	English I	Nil	3	اللغة الإنجليزية 1	ع إ 141
GH142	English II	GH141	3	اللغة الإنجليزية 2	ع إ 142
GH150	Arabic I	Nil	2	اللغة العربية 1	ع إ 150
GH151	Arabic II	GH150	1	اللغةالعربية 2	ع إ 151
GH152	Technical Writing	GH151	1	كتابة التقاريرالفنية	ع إ 152
Total Credits			10	إجمالي عددالوحدات	

العلوم الاساسية العامة General Science Course

Course No.	Course name	Pre request	Credits	اسم المقرر	رقم المقرر
		المتطلبات	الوحدات		
GS101	Mathematics I	Nil	3	الرياضيات 1	ع ع 101
GS102	Mathematics II	GS101	4	الرياضيات 2	ع ع 102
GS111	Physics I	Nil	3	الفيزياء 1	ع ع 111
GS112	Physics II	GS111	3	الفيزياء 2	ع ع 112
GS112L	Physics Lab	GS111	1	فيزياء معمل	ع ع 112 م
GS115	Chemistry	Nil	3	الكيمياء العامة	ع ع 115
GS115L	Chemistry Lab	Nil	1	الكيمياء معمل	ع ع 115 م
GS200	Computer Programming	Nil	3	برمجة حاسوب	ع ع 200
GS203	Mathematics III	GS102	3	الرياضيات 3	ع ع 203
GS204	Mathematics IV	GS102	3	الرياضيات 4	ع ع 204
GS206	Probability & Statistics	Nil	3	الإحصاء والاحتمالات	ع ع 206
Total Credits			30	إجماليعددالوحدات	

العلوم الهندسية العامة General Engineering Courses

Course No.	Course name	Pre request المتطلبات	Credits الوحدات	اسم المقرر	رقم المقرر
GE121	Engineering Mechanics I	Nil	3	ميكانيكا هندسية 1	هـ ع121
GE125	Engineering Graphics	Nil	2	الهندسة الوصفية	هـ ع 125
GE127	Engineering Drawing	Nil	2	الرسم الهندسي	هـ ع 127
GE129	Workshop Technology	Nil	2	تقنية الورش	هـ ع 129
GE129 L	Workshop Technology Lab	Nil	1	معمل تقنية الورش	هـ ع 129 م
GE133	Properties of Materials	GS101 GS111 GS115	3	خواص المواد	هـ ع 133
GE222	Engineering Mechanics II	GE121	3	ميكانيكا هندسية 2	هـ ع 222
Total Credits			16	إجمالي عدد الوحدات	

ثانيا :- قائمة مسميات المقررات الدراسية الملزمة والمشتركة مع أقسام اخرى 2nd List of departmental .

Compulsory Common Corses

Course No.	Course name	Pre request المتطلبات	Credits الوحدات	اسم المقرر	رقم المقرر
GeoE 110	General Geology	Nil	3	جيولوجيا عامة	هـ جل 110
GeoE 220	Structural Geology	GeoE 110	3	جيولوجيا تركيبية	هـ جل 220
GeoE 230	Mineralogy & Petrology	GeoE 110	4	معادن وصخور	هـ جل 230
GeoE 363	Economic Geology	GeoE 220 + GeoE 230	3	جيولوجيا اقتصادية	هـ جل 363
CHE 211	Physical Chemistry	GS115	3	كيمياء فيزيائية	هـ كم 211
CHE 211L	Physical Chemistry Lab.	CHE211	1	كيمياء فيزيائية معمل	هـ كم 211 م
CHE 301	Thermodynamics	CHE211	3	ديناميكا حرارية	هـ كم 301
CHE 311M	Fluid Mechanics	CHE211	3	ميكانيكا الموائع	هـ كم 311م
CE231	General Surveying	Nil	3	مساحة عامة	هـ مد 231
EE280	Electrical Eng. Fundamentals	GS101+ GS112	3	أساسيات الهندسة الكهربية	هك 280
Total Credits			29	إجمالي عدد الوحدات	

ثالثا :- قائمة مسميات المقررات الدراسية الملزمة لطلبة قسم هندسة التعدين.

3th : List of Departmental Compulsory Course

Course No.	Course name	Pre request المتطلبات	units الوحدات	اسم المقرر	رقم المقرر
MinE 211	Introduction of Mining Eng.	GeoE110 + GE133	3	مقدمة هندسة التعدين	هـ تع 211
MinE 311	Rock Mechanics 1	GeoE220 + MinE211	3	ميكانيكا الصخور 1	هـ تع 311
MinE 312	Drilling & Blasting	MinE 311	3	الحفر والتفجير	هـ تع 312
MinE 313	Surface Mining 1	MinE 312	3	مناجم سطحية 1	هـ تع 313
MinE 314	Ore Dressing 1	GeoE230 + CHE301 + CHE311	3	تجهيز خامات 1	هـ تع 314
MinE 321	Rock Mechanics 2	MinE 311	3	ميكانيكا الصخور 2	هـ تع 321
MinE 322	Underground Mining	MinE 313 + MinE 321	3	مناجم تحت سطحية	هـ تع 322
MinE 323	Surface Mining 2	MinE 313	3	مناجم سطحية 2	هـ تع 323
MinE 324	Ore Dressing 2	MinE 314	3	تجهيز خامات 2	هـ تع 324
MinE 325	Mining Geophysics	GeoE220 + EE280	2	جيوفيزياء التعدين	هـ تع 325
MinE 411	Mine Surveying	MinE 323 + MinE 322 +CE231	3	مساحة مناجم	هـ تع 411
MinE 412	Tunneling Construction & Supporting	MinE 322 + MinE 312	3	فتح ودعم الانفاق	هـ تع 412
MinE 421	Mine Ventilation	MinE 322 +CHE301 + CHE311	3	تهوية مناجم	هـ تع 421
MinE 422	Mine Machinery	MinE 412 + GE125 + GE127	3	ماكينات التعدين	هـ تع 422
MinE 423	Mine Economics	MinE 323 + MinE 484 +GE127	3	اقتصاديات التعدين	هـ تع 423
MinE 427	Mine Safety	انجاز 120 وحدة دراسية	2	امن منجمي	هـ تع 427
MinE 428	Mine Management	انجاز 120 وحدة دراسية	2	ادارة مناجم	هـ تع 428
MinE 429	Electives	انجاز 130 وحدة دراسية	2	مختارات	هـ تع 429
MinE 430	Mine Hydraulics	MinE 422	3	هيدروليكا التعدين	هـ تع 430
MinE 484	Mining Geology	GeoE230 + GeoE363	3	جيولوجيا التعدين	هـ تع 484
MinE 488	Computer Application	انجاز 130 وحدة دراسية + GS 200	3	تطبيقات حاسوب	هتع488
MinE 492	Rock Slop Eng.	MinE 322 + MinE 321	3	هندسة ميول	هـ تع 492
MinE 495	Mining Seminar	انجاز 130 وحدة دراسية	1	الندوة التعدينية	هـ تع 495
MinE 599	Project	انجاز 130 وحدة دراسية	4	المشروع	هـ تع 599
			67	المجمـــــوع	

ملخص متطلبات التخرج للطالب بقسم هندسة التعدين

القسم	الشعبة	العلوم الإنسانية		العلوم الاساسية العامة		العلوم الهندسية العامة		المقررات التخصصية المشتركة مع الأقسام الأخرى		المقررات التخصصية الملزمة لجميع طلبة القسم		الإجمالي
		عدد الوحدات	النسبة المئوية من اجمالي عدد الوحدات الكلية	عدد الوحدات	النسبة المئوية من اجمالي عدد الوحدات الكلية	عدد الوحدات	النسبة المئوية من اجمالي عدد الوحدات الكلية	عدد الوحدات	النسبة المئوية من اجمالي عدد الوحدات الكلية	عدد الوحدات	النسبة المئوية من اجمالي عدد الوحدات الكلية	
هندسة التعدين	قسم شعبة واحدة	10	6.6%	30	19.7%	16	10.5%	29	19.1%	67	44.1%	152

Departmental CoursesSyllabus for Mining Engineering		
MinE 211	**Introduction to Mining Engineering**	**3 Credits**

Pre-requisite: GeoE110 - GE133

Historical background, mining terminology, prospection and exploration, drilling and drills, rock blasting, haulage and hosting, rock mechanics and supporting, shaft sinking, mine organization, drainage, ventilation and safety in mines, processing and marketing.

MinE 311	**Rock Mechanics 1**	**3 Credits**

Pre-requisite: MinE211- GeoE220

Studies of stresses type, theory of elasticity and its applications, types of rocks and mineral and physical properties, geological and engineering classification, mechanical properties of rocks, types of failure, theory of elasticity and optical and applications using models, laboratory and field methods to study and determine the values and trends of the stresses, study of soil subsidence as a result of mining operations.

MinE 312	**Drilling and Blasting**	**3 Credits**

Pre-requisite: MinE311

Applications of rock drilling , drilling theory & mechanism , drill ability, types of drilling, drilling machines , properties of explosives , blasting agent, types of cuts , pattern design , design of blasting circuits, application of computer programs in drilling and blasting.

MinE 313	Surface Mining 1	3 Credits

Pre-requisite: MinE312

Introduction, quarry terminology, stripping ratio (overbarding - ore), quarry opening up, planning and engineering design of quarry, mining operations, drilling equipments, selection and number of drilling equipment.

MinE 314	Ore Dressing 1	3 Credits

Pre-requisite:GeoE230 - CHE301 - CHE311M

Introduction to science of ore dressing, general aspects of comminution, comminution laws, crushing, crushing and grinding mills, liberation particle size analysis, industry screening (crushing and grinding units, screening, movements of solids in fluids, classification method, ore concentration, methods concentration depend on the forces of gravity and moving membranes).

MinE 321	Rock Mechanics 2	3 Credits

Pre-requisite: MinE311

Stress-strain transportation, behavior of rock joints, design of underground openings (circular and elliptical shape), rock support type (theory and techniques), geological data analysis in (stereonet and computer methods), in situ- stress measurement geological faulting.

MinE 322	Underground Mining	3 Credits

Pre-requisite: MinE 313 - MinE 321

Underground mining terms, geological factors affecting mining methods, prospecting& exploration stages, development& exploitation stages, drilling & blasting of underground mine, loading and haulage operations & equipment in underground mining, types of roof mine supports, different types of underground mining methods, -selection of suitable mining methods according to geological and ore condition.

MinE 323	Surface Mining 2	3 Credits

Pre-requisite: MinE313

Current and future status of surface mining, prospecting and exploration, land and water acquisitions: preliminary evaluation, planning and engineering design of open pits, quarries, and alluvial mining operations, appiying computer programs: exploitation, unit operations, drilling, blasting, and excavation, loading, haulage and transportation, etc. auxiliary operations, organization, management and economics.

MinE 324	Ore Dressing 2	3 Credits

Pre-requisite: MinE314

Concentration of ores using Magnetic and electrostatic methods, principles of solid extraction of metals, floating and its relation to solution and surface chemistry, equilibrium, surface energy, selection agglomeration and separation, flouting from the practical and kinetic view, using of flow sheets and computer applications in ore dressing.

MinE 325	Mining Geophysics	2 Credits

Pre-requisite: EE280- GeoE220

Survey of geophysical methods of exploration: gravity magnetic, seismic, electric, electromagnetic, induced polarization, well logging, radioactivity and others, elementary theory, filed practice and techniques of interpretation, case histories and applications in mining engineering and rock mechanics are included.

MinE 411	Mine Surveying	3 Credits

Pre-requisite: MinE323 – MinE 422 – CE231

Triangulation figures (design, measuring and correction), introduction to mine surveying, underground traversing workings (design, measuring orientation connection and correction), apply the theory of errors and probability in mine survey, computer application in mine survey, application of mine survey in tunnels construction, exercise for contour map drawing.

MinE 412	Tunneling Construction and Supporting	3 Credits

Pre-requisite: MinE312- MinE322

Studies of different types of tunnels (civil and mining tunnels), factors influencing tunnel location (choosing the tunnel location), merits of tunnel profiles, influence of surroundings on shape and size of tunnel, methods of tunnel openings, efficiency of tunnlling machines, stress studies of open tunnel, tunnel support types(immediate and permanent).

MinE 421	Mine Ventilation	3 Credits

Pre-requisite: MinE322 – CHE301 – CHE311M

General introduction. Mine air quality control. Mine gases, dust and radiation: Sources, detection, suppression, physiological effects and permissible limits. Mine air conditioning: Heat and moisture, Sources, Psychrometry, Physiological reactions to climatic conditions. Mine ventilation: Airflow network, Circuit laws, Natural ventilation. Health and safety standards codes. Mine accidents, Emergency response and rescue plan. Application of computer programs to ventilation system.

MinE 422	Mine Machinery	3 Credits

Pre-requisite: MinE412 – GE125 – GE127

A general review of material and mining ore handling, classification of mine plant and equipment, selection parameters of mine equipment,. ore transportation and handling system: trucks, belt conveyor, bucket elevators, open and closed chain, screw, shaker and vibratory conveyors, rope haulage system: monorails, main rope, main and tail rope, balance main rope, endless rope, balance endless and reversible endless rope haulage and Aerial ropeways, application of computer programs to ore handling system.

MinE 423	Mine Economics	3 Credits

Pre-requisite: MinE323 – MinE484 – GE127

General introduction: Minerals contributions to economic development, economic minerals, resources, reserves, new supplies, research demands, consumption, recycling and depletion, ore reserve estimation and grades; mineral sales prices projection and NSR , concept of time value of money, interest rate, inflation, and cost indices, estimating cost of mine development and ore production operation,

and smelter schedule, cash flow construction, time diagram, tax structure, and project viability, spreadsheet computer applications, introduction to sensitivity and statistical analysis and review initial feasibility reports.

MinE 427	Mine Safety	2 Credits

Pre-requisite: Pass 130 units

Basics of safety in mines and quarries, toxic gases and methods of their prevention, safety equipments and devices, fire prevention, noise, radiation and its preventions, types of different hazards in mining, rocks and underground water.

MinE 428	Mine Management	2 Credits

Pre-requisite: Pass 130 units

Aim of management, planning (objectives and controls), policy selection and outlining procedures, forecasting future program and preparing budgets, setting production plans and time schedule, organization (chart design, job description, correlation, selection of directors), initiation (motivation, leadership, communication), control (selection of standard technique, performance evaluation, identification of problems and methods of solution),use a mining software & spreadsheets for mine planning, Management structure of a modern mining industry.

MinE 429	Elective	3 Credits

Pre-requisite: Pass 130 units

Advanced studies: in field of blasting rock breaking, slope stability and design in opencast mines and quarries, computers and linear programming in transportation, optimum production and other factors affecting production.

MinE 430	Mining Hydraulics	3 Credits

Pre-requisite: MinE422

Hydraulic fluids and emulsions used in mine machinery, pumps and motors, hydraulic coupling valves, tanks, filters and other components of hydraulic equipment, hydraulic circuits, above surface and remote control applications, examples and applications.

MinE 484	Mining Geology	3 Credits

Pre-requisite: GeoE363- GeoE230

The course reviews the mineralogy of economic mineral deposits(metallic or industrial) with emphasis on their economic value and study the factors affecting the price of these ore mineral from industrial point of view, following detailed discussion of reconnaissance of mineral deposits concerned with their nature, shapes and the changes occurred in the rock wall, then goes on to mineral exploitation and exploitation stages. The last part deals with economic mineral deposits from their mineral composition, percentage of metals and their uses.

MinE 488	Computer Applications	2 Credits

Pre-requisite :Pass 130 units – GS200

Introduction, computer-based analysis of geosciences data-mine development planning to satisfy ventilation and transportation requirements, applications related to rock mechanics, surface mine, ore reserve calculations, mineral processing and environments subjects, specialized mining software.

MinE 492	Rock Slope Engineering	3 Credits

Pre-requisite: MinE321 – MinE322

Introduction to slope stability and classification of slope movement, geological and geotechnical factors, influence in slope stability, water effects and crack tension, techniques and methods for slope failure analysis, support system, instrumentation.

MinE 495	Mining Seminar	One Credit

Pre-requisite: Pass 130 units

Presentation of newly published studies and research in the fields of mining engineering in the form of a scientific report prepared by the student and presented for discussion during the seminar in which students participate individually or in groups, as determined by the committee supervising the seminar from the faculty of the department.

MinE 599	Senior Project	4 Credits

Pre-requisite: Pass 130 units

Preparing engineering designs based on the studies that have been conducted on taking the exposed sites of local raw materials and supporting it with an economic engineering report on all stages of operation, production, processing and numbers until the final marketing operations. It reflects the creativity of each student in the field of mining engineering.