



Basrah University
College of science
Geology department



CURRICULUM BACHELOR'S DEGREE GEOLOGY DEPARTMENT SHORT DESCRIPTION

FIRST STAGE

Crystallography G101

Introduce the student to crystallography. Introduce the student to the crystal and its parts, Enable the student to distinguish between crystal form and crystal pattern, Familiarize the student with the different ways to draw crystals, Teaching the student using some mathematical equations to find the coordinates, range, and axis of the range of crystal faces, Teaching students using crystalline axes and axial angles, as well as the work of stereographic projections, to distinguish between the seven different crystal groups.

Mineralogy G102

The objective of mineralogy course is to provide students with the basic principles and knowledge of minerals. It covers the following aspects: physical properties, chemical composition, crystal structure, and internal atomic arrangement, types of chemical bonds that holds atoms, classification, origin, and the process of mineral formation.

Physical Geology G103

Understanding what is the earth, studying and understand the minerals and rocks, explain some idioms for studying topographical and geological maps.

Paleontology G105

Explain a study of fauna and flora and related their of environmental, stratigraphic and petroleum exploration

Rocks and minerals G106

Study the sedimentary, metamorphic, and igneous rocks with the minerals contents

Historical Geology G108

Study of the physical and biological evolution for the earth history



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SECOND STAGE

Optical Minerals G200

The aim of this course is to give students information about the visual specifications of minerals, How to extract this specification? Determining the names of the crystals for those minerals knowing the quality of rocks.

Igneous Rocks G201

Introducing igneous rocks and the methods of their formation in nature and their importance to humans. Study of the types of igneous rocks and their main groups and the types of magma and their properties that make up these rocks. Identify the hand and microscopic samples of these rocks and how to diagnose and distinguish them. Identify methods for deducing the geological history of these rocks and the areas of their origin and formation.

Sedimentary rocks G202

Study the sedimentary rocks with the mineralogy composition and study these rocks from the lithology and petroleum aspects

Micropaleontology G203

The knowledge of Microfossils' types and how to extraction from rocks and it's classification to use it in a different Geology studies

Geomorphology G204

The aim of this course is to give students an introduction to understand what geomorphology is and its importance in geology, to study the factors contributing to the formation of the Earth's surface, the familiarize the student with the landforms resulting from weathering processes and various erosion factors. The student should deduce the types of landforms and how they originated and developed through field study or from examining pairs of aerial photographs and satellite imageries, the student understand how to use some of the quantitative analysis methods used in studying the features of landforms. The student will be trained on the methods of collecting study samples from the field in the field study, and how to analyze them in the laboratory and identify their geomorphological implications. To understand the role of geology in the study of natural phenomena

Hydrology G205

Study the basic principles of hydrology and water cycle



Principle of geophysics G207

Introduction to the concept of geophysics and basics, teaching students the exploration methods in geophysics like the Gravitational method, Electric method, Seismic method, Magnetic method.

Geochemistry G208

The distribution and classification of major, trace and rare earth elements in different types of rocks of the earth crust in order to understand the origin of rocks and sediments, and determine the factors controlling their enrichment to be an economic important ores or deposits

Structural Geology G209

Knowing the deformations on the earth, finding the causative forces and their future, and knowing the response of each structure caused by the deformation.

Remote sensing G210

It is teaching students the subject of remote sensing and defining its types and importance in spatial studies, then knowing the characteristics and types of aerial images through the use of a stereo scoop, then displacement of distortion and how to design parallel images, then defining the space-based sensing and knowing the physical foundations of its components, analyzing remote sensing data, and then how to process Images and their improvement, then identifying satellites and their types and how to use satellite visuals in studying urban and rural environments and knowing the requirements for designing topographic maps from satellite visuals at different scales and their features.

Statistical Geology G230

Teaches the students the basic principles of statistic and probability theory and how to use these principles in different fields of geology

THIRD STAGE

Geology of Iraq G300

The course on the Geology of Iraq consists of study of the Stratigraphy, Structural, Seismology, and Tectonic evolution of North East Part of Arabian Plat during geological time, as well as of the distribution of economic resources of Iraq.

Stratigraphy G301

The study of the stratigraphic sequences of rocks, mainly sedimentary rocks, as they are deposited in the form of layers due to different sedimentary factors, as well as knowledge of the sedimentary environments that led to the deposition of these layers based on a set of geological laws, the most important of which is the principle of the present key to the past,



as the geological processes that we see lead to the formation of A group of sedimentary rocks that are the same processes that led to the formation of sedimentary rocks and layers in a past time. Also, the focus in this course is on knowledge of ancient geological processes

Field Geology G302

Field Geology the study of the lithology, stratigraphy, mineralogy, geomorphological, and morphological features in the field, projecting them on the base map and converting them into geological map after projecting on them the geological and tectonic information obtained from field work.

Metamorphic Rocks G303

The aim of this course is to give student's definition of metamorphic rocks and the processes of metamorphic rock that lead to the formation of these rocks in nature. Studying the types, conditions and conditions of the metamorphic process and the characteristics of each type of these processes. Learn how to study hand and microscopic samples of these rocks and how to distinguish and diagnose them and identify methods for determining the geological history of these rocks and the environments in which they are formed.

Recent environmental sediment G305

The aim of this course is to give students an introduction to sediments, the mechanics of transport and deposition, give an introduction to each sedimentary environment and possibility to identify the sedimentary environment

Hydrogeology G306

Study the accuracy, movement, and distribution of groundwater undersurface and all the internal and external factors that effects on it.

Petroleum geology G307

A study of the emergence and migration of oils, the chemical composition of oil, its physical properties, types of oil traps and oil reservoirs.

Oil Reservoir G308

Oil Reservoir is a branch of petroleum geology that deal with rocks, and fluids properties in the reservoir, and applies scientific principles to the flow through porous medium during production of oil and gas reservoir so as obtain a high economic recovery.

Engineering Geology G309

Study the geological factors that affect the engineering behavior of soil and rocks



Economic geology G3415

Economic geology course deals mainly with metallic and some non-metallic mineral resources and deposits. The objective is to provide students with the basic principles and knowledge of economic geology in terms of: development of theories on ore genesis, classification of ore deposits; types, origin, migration and deposition processes of ore bearing fluids; the main physical and chemical factors that control the formation of ore deposits; and the distribution of metallic and non-metallic deposits particularly in Iraq.

FOURTH STAGE

Exploration Geochemistry G401

Practical applications of mineral exploration and exploration for ores and mineral wealth in rocks and sediments

Subsurface geology & Well logging G403

The aim of this course is to give students information's about wireline logs (principles and application) for determine a petrophysical and reservoir characterization. There are several applications of logs in geological and reservoir studies.

Geotectonic G404

The aim of this course is to give students information to identify the causes of the continental movement of and the margins ridge growth of oceans and the causes of natural phenomena such as building mountains, volcanoes and earthquakes.

Exploration geophysics G405

The aim of this course is to give students information to identify the application of geophysics methods to explore the subsurface geological problems. Which it is help to find the appropriate solution to the subsurface problems.

Palynology G407

A study of flora or plants fossils which contain wall organic composition with related there in environmental, stratigraphic and petroleum exploration

Research project G409

It helps students to write a proper science paper to improve their scales in different geological topics.



ELECTIVE COURSES

Marine Physics G311

Identify the nature of the physical characteristics of marine and ocean waters and study them and their impact on the nature of the seas and oceans and thus their impact on the planet Earth

Engineering Geophysics G312

Linking geophysical and engineering information and using it in soil investigations

Paleoecology G313

The course aims to provide students with information related to the ancient environment and methods of studying it and benefiting from it in environmental and geological applications.

Microfacies for limestone rocks G316

The aim of this course to teach the student how to determine the most important textures characteristics of limestone rocks, which are oil reserving rocks.

Seismology G317

This course introduces the concepts of the study earthquakes and effects on the landslides and discovering the earth layers

Industrial rocks and minerals G320

Industrial and production application of raw materials of geological origin, which include non-metallic materials found in rock formations and recent sediments

Applied Structural geology G410

Identifying the composition of the earth, its components and the reasons for its emergence, as well as studying the primary and secondary sedimentary structures, the processes and forces that led to its formation, such as mountains, folds, and others, as well as studying its importance in oil geology, economic geology and water resources.

Stability of soil G411

Study the stability of slopes, Dams and embankments and causes of failure

Rock mechanic G413

Determination of engineering properties of rock mass, Determination of stress and deformation in rock due to external force. Studying the capacity of rocks to resistance stress and prevent collapse them



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Organic geochemistry G416

Studying the chemical compositions of oil and knowing the biomarker indicating the source of the oil and its origin, and evaluating the oil-generating rocks and their ability to produce oil.

Environmental Geology G428

The student can know the environment, its elements and components, the ecological balance and the flow of energy in the environment with the covers existing in the environment and the biogeochemical cycles affecting the ecological balance. In addition to which pollution issues Local and global, which lead to the deterioration of the ecosystem and the impact of this pollution on human health. In addition to the environment.

Clay minerals G429

Study the clay minerals contents in the sedimentary rocks and the clay minerals types

GIS G431

Introducing students to the basic concepts of geographic information systems. And highlighting the components of the geographic information system with a focus on (Arc GIS) and (Global Mapper) systems. Enabling students to deal with GIS independently and developing students' skills by designing and implementing an integrated study project.

Deserts and desertification G432

Study of deserts and the important processes that led to desertification

Reservoir Management G434

Reservoir Management is optimism method of interest for increasing the comfort the companies, by combining geological information, petroleum engineering petrophysics, geophysics, drilling and methods of oil recovery, addition to using traditional statistic and geo static methods, including the 3D software application and the use of strategies for the production process through life of reservoir to depletion period.