

Department of Geology

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Professor:	Abdel-Rahman, Abdel-Fattah M.
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The Department of Geology offers programs leading to the degree of Bachelor of Science in Geology, and Master of Science degrees in certain areas of the vast field of geological sciences. It also offers a more broadly based program leading to the degree of Bachelor of Science in Petroleum Studies. Students wishing to major in geology or petroleum studies must secure the approval of the department. In addition, students must have a strong background in sciences and have taken the freshman science program or its equivalent.

The department also offers the following undergraduate elective courses: GEOL 101, GEOL 102, GEOL 103, GEOL 104, and GEOL 201 in the area of general geology, and GEOL 205 in environmental geology.

Field trips are required parts of most geology courses.

Mission Statement

The Department of Geology at the American University of Beirut is committed in providing the best Geoscience education in the Middle East, via its emphasis on excellence in teaching, and engaging students in research. The aim is to prepare our students to fulfill the needs of this region in terms of its geological nature, its petroleum and mineral resources, as well as groundwater resources, and their role in world economy and environmental implications. This is achieved within the context of learning about the occurrence, distribution and origin of natural resources worldwide. With the structure of our courses which include laboratory components, field components, term papers, oral presentations, and problem-solving assignments, we train our students to observe, analyze, critically evaluate, think independently, and derive their own conclusions. We emphasize the development of the conceptual apparatus, and the unbiased and accurate reporting of field and laboratory data (observation) and its significance in reaching a correct interpretation. In this manner, we promote high ethical professional standards, character, and scientific integrity. The program prepares our students to be life-long learners and well-rounded individuals, who can lead successful careers in the areas of energy and petroleum resources, hydrogeology, mining, geotechnical sciences and related fields.

- GEOL 102 Environmental Physical Geography 3.0; 3 cr.**
An introduction to the structure, classification, physical processes and characteristics of the earth's atmosphere, hydrosphere and biosphere, dynamics of change, and associated environmental impacts. *Each semester.*
- GEOL 103 Introduction to Marine Geology 3.0; 3 cr.**
A freshman level survey of oceanic geological processes, wave dynamics, submarine springs, marine economic mineral resources, marine communities, pollution, global change, and marine-related environmental issues. *Each semester.*
- GEOL 104 Natural Disasters 3.0, 3 cr.**
A freshman level course covering events involving natural forces that have major devastating effects on humankind. These include mud flows, land slides and slope failure, earthquakes, tsunamis, explosive eruptions and volcanic hazards, meteoritic impact and mass extinctions, hurricanes and tornadoes, flooding, and forest fires. *Each semester.*
- GEOL 201 Physical Geology 3.0; 3 cr.**
An introduction to minerals, igneous, sedimentary and metamorphic rocks, geological structures, and external earth processes, including the geologic work of streams, glaciers, groundwater, wind, and plate tectonic theory. *Each semester.*
- GEOL 202 Historical Geology 2.2; 3 cr.**
An introduction to earth history, including the principles of interpreting the past, origin, and development of the solar system. This course also provides an introduction to the systematic study of fossils, their classification, and identification. *Prerequisites: GEOL 201, GEOL 203, or consent of instructor. Annually.*
- GEOL 203 Physical Geology Laboratory 0.2; 1 cr.**
An introduction to the identification of rocks and minerals in hand specimen, geographic and geological maps, and basic interpretation of geological data. *Pre- or co-requisite: GEOL 101, GEOL 102, GEOL 103, or GEOL 201, or consent of instructor. Each semester.*
- GEOL 205 Earth Resources and Energy 3.0; 3 cr.**
A study of the main economic mineral resources and traditional and alternate energy resources, with an emphasis on the environmental impacts of their use and misuse. A special emphasis is given to regional issues. *Open to both arts and sciences students. Each semester.*
- GEOL 207 Map Interpretation 2.2; 3 cr.**
A course on the description, reading and interpretation of topographic and geological maps. This course also introduces stereographic projections, construction of cross-sections across geologic structures, and basic field mapping techniques. *Prerequisites: GEOL 201, GEOL 203, or consent of instructor. Occasionally.*
- GEOL 210 Geomorphology 3.0; 3 cr.**
An introduction to the study of land forms and the interaction of external geological forces and erosion agents with the structure and composition of their surface rocks. This course is also an examination of the interaction between the internal and external earth processes responsible for the development of land forms. *Prerequisites: GEOL 201 and GEOL 203, or concurrently, with consent of instructor. Annually.*
- GEOL 211 Crystallography and Physical Mineralogy 2.2; 3 cr.**
An introduction to the study and classification of crystals; properties of minerals as related to their crystal structure; identification, description, and classification of minerals. This course entails practical work with crystal models and hand specimens of common minerals. *Annually.*

40 Credits¹ in Geology

Modes of Analysis	English and Arabic (9)	Humanities (12)	Social Sciences (6+Unspecified)	Natural Sciences (40)	Quantitative Thought (3)
Lecture Courses (9+12+3+40+3)	<ol style="list-style-type: none"> Required Arabic course: ARAB 201 A or any General Education Arabic communication skills (3) Required English courses: ENGL 203(3), 204(3) 	Required credits in the humanities: 12 credits including 6 credits from CVSP	Required elective economics courses: a 200-level approved GE economics course (3), and a 200-level approved GE education course (3) from this list: EDUC 215, or 230	<ol style="list-style-type: none"> Required geology courses: GEOL 201¹(3), 202^{2,3}(3), 210^{2,3}(3), 211⁴(3), 212^{2,4}(3), 213^{2,3,4}(3), 214^{2,3}(3), 219^{2,4}(3), 221^{2,3,4}(3), 222^{2,3,4}(3), 224^{2,3}(3), 229^{2,3}(6) Elective geology courses: GEOL 205^{2,3}(3), 225^{2,3}(3), 271^{2,3}(3), 272^{2,3}(3) One natural science must be an approved GE course from outside the major (in PHYS, CHEM, or BIOL) 	Required elective computer science courses: CMPS 209(3)
Seminar (24+12)				<ol style="list-style-type: none"> Required geology courses: GEOL 201b(3), 202^{2,3}(3), 210^{2,3}(3), 213^{2,3,4}(3), 214^{2,3}(3), 221^{2,3,4}(3), 222^{2,3,4}(3), 224^{2,3}(3) Elective geology courses: GEOL 205^{2,3}(3), 225^{2,3}(3), 271^{2,3}(3), 272^{2,3}(3) 	
Laboratory (25,3)				<ol style="list-style-type: none"> Required geology courses: GEOL 203(1), 211b(3), 212^{2,4}(3), 213^{2,3,4}(3), 219^{2,4}(3), 221^{2,3,4}(3), 222^{2,3,4}(3), 229^{2,3}(6) 	
Research Project (36+12)				<ol style="list-style-type: none"> Required geology courses: 201¹(3), 202^{2,3}(3), 210^{2,3}(3), 212^{2,4}(3), 213^{2,3,4}(3), 214^{2,3}(3), 219^{2,4}(3), 221^{2,3,4}(3), 222^{2,3,4}(3), 224^{2,3}(3), 229^{2,3}(6) Elective geology courses: GEOL 205^{2,3}(3), 225^{2,3}(3), 271^{2,3}(3), 272^{2,3}(3) 	

1 Plus 50 required and elective credits

2 Combined lecture, laboratory (field), and research project courses

3 Combined lecture and seminar courses

4 Combined lecture and lab courses

37 Credits¹ in Petroleum Studies

Modes of Analysis	English and Arabic (9)	Humanities (12)	Social Sciences (12)	Natural Sciences (37+6)	Quantitative Thought (3)
Lecture Courses (9+12+9+3+37+6+3)	<ol style="list-style-type: none"> Required Arabic course: 201A General Education Arabic communication skills (3) Required English courses: 203(3), 204(3) 	Required credits in the humanities: 12 credits including 6 credits from CVSP	<ol style="list-style-type: none"> Required business courses: ACCT 210(3), MNGT 215(3), MKTG 210(3) Economics courses: ECON 211(3) One approved General Education social science course (3). 	<ol style="list-style-type: none"> Required geology courses: GEOL 201²(3), 202^{2,3}(3), 211⁴(3), 212^{2,4}(3), 213^{2,3,4}(3), 214^{2,3}(3), 219^{2,4}(3), 221^{2,3,4}(3), 222^{2,3,4}(3), 225^{2,4}(3), 229^{2,3}(6) Elective geology courses: CHEM 201(3), 208(3) 	Required elective computer science courses: CMPS 209(3)
Seminar (30+12)				<ol style="list-style-type: none"> Required geology courses: GEOL 201²(3), 202^{2,3}(3), 213^{2,3,4}(3), 214^{2,3}(3), 219^{2,4}(3), 221^{2,3,4}(3), 222^{2,3,4}(3), 225^{2,4}(3), 229^{2,3}(6) Elective geology courses: GEOL 205^{2,3}(3), 210^{2,3}(3), 271^{2,3}(3), 272^{2,3}(3) 	
Laboratory (13,3)				<ol style="list-style-type: none"> Required geology courses: GEOL 203(1), 211d(3), 212^{2,4}(3), 213^{2,3,4}(3), 222^{2,3,4}(3) 	
Research Project (30+12)				<ol style="list-style-type: none"> Required geology courses: GEOL 201⁴(3), 202^{2,3}(3), 213^{2,3,4}(3), 214^{2,3}(3), 219^{2,4}(3), 221^{2,3,4}(3), 222^{2,3,4}(3), 225^{2,4}(3), 229^{2,3}(6) Elective geology courses: GEOL 205^{2,3}(3), 210^{2,3}(3), 271^{2,3}(3), 272^{2,3}(3) 	

1 Plus 21 required credits in business, economics, and chemistry, in addition to 38 required and elective credits

2 Combined lecture and research project courses.

3 Combined lecture and seminar courses.

4 Combined lecture and lab courses.