Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 801100 **Description:** Principles of Astronomy

Full Course Description:

Couse ID: 801105 **Description:** Practical General Geology(2)

Full Course Description:

Couse ID: 801231 **Description:** Igneous and Metamorphic Rocks

Full Course Description:

Couse ID: 801241 **Description:** Astronomy

Full Course Description:

Couse ID: 801251 **Description:** Geomorphology

Full Course Description:

Couse ID: 801312 **Description:** Biostratigraphy

Full Course Description:

Couse ID: 801322 **Description:** Mineral & Environmental Resources

Full Course Description:

Couse ID: 801331 **Description:** Sedimentary Rocks

Full Course Description:

Couse ID: 801352 **Description:** Geological Mapping

Full Course Description:

Couse ID: 801355 **Description:** Geomorphology

Full Course Description:

Couse ID: 801361 **Description:** Principles of Geophysics

Full Course Description:

Couse ID: 801412 **Description:** Paleo Bio.Environment

Full Course Description:

Couse ID: 801423 **Description:** Mining Geology and Environments

Full Course Description:

Couse ID: 801451 **Description:** Geology of Jordan

Full Course Description:

Couse ID: 801452 **Description:** Petroleom Geology

Full Course Description:

Couse ID: 801453 **Description:** Geotectonics

Full Course Description:

Couse ID: 801454 **Description:** Engineering Geology

Full Course Description:

Couse ID: 801461 **Description:** Seismology

Full Course Description:

Couse ID: 801462 **Description:** Seismology

Full Course Description:

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 801463 **Description:** Environmental & Applied Geophysics

Full Course Description:

Couse ID: 801484 **Description:** Geology and Waste Management

Full Course Description:

Couse ID: 801491 **Description:** Seminar

Full Course Description:

Couse ID: 801492 **Description:** Seminar

Full Course Description:

Couse ID: 801493 **Description:** Statistical Geology

Full Course Description:

Couse ID: 1201100 **Description:** Principles of Astronomy

Full Course Description: Astronomy and astronomical terminology and universe, the solar system, celestial sphere, optical telescope, observed properties of stars, spectral classifications, magnitudes system , binary star system, deduce stellar properties, astronomical distance measurements, Hertzberg chart model.

Couse ID: 1201101 **Description:** Geology

Full Course Description: Earth materials: minerals as a building unite of rocks, igneous rocks, weathering of rocks, sedimentary and metamorphic rocks; Earth's internal processes: plate tectonics, volcanic activity, earthquakes, geological structures, mountain building, origin of oceans and continents, geological time: principles of relative dating.

Couse ID: 1201102 **Description:** Environmental Geology

Full Course Description: This course introduces the student to Earth: systems and cycles, natural hazards: earthquakes, volcanic eruptions, tsunami, mass wasting, sinkholes, flooding, disasters caused be atmosphere and hydrosphere, meteorites impacts, fossil fuel and energy alternative resources, water resources.

Couse ID: 1201104 **Description:** Practical General Geology (1)

Full Course Description: Crystal systems and forms, classification and physical properties of minerals. Classification, origin and properties of igneous, sedimentary and metamorphic rocks. Geological time scale and relative dating of geological events. One-day field trip.

Couse ID: 1201105 **Description:** Practical General Geology (2)

Full Course Description: Topographic and contour maps and geological maps, aerial photography, geological sections measuring techniques, fossils collection, identification, and grouping. One-day field trip.

Couse ID: 1201211 **Description:** Paleontology

Full Course Description:

The origin of life and importance of fossils and the invertebrate fossil groups. Student will be introduced to the fossil group; trilobites, graptolites, brachiopods, molluscus, and echinoderms, laboratory applications.

Couse ID: 1201220 **Description:** Mineralogy

Full Course Description: Mineralogy, crystallography, stereographic projection, crystal classification, chemistry of minerals and physical properties of minerals. X-rays, polarized microscope, scanning electron microprobe in mineralogy and the systematic classification of minerals, rock-forming minerals, Field trip and laboratory applications.

Couse ID: 1201221 **Description:** Mineralogy

Full Course Description:

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1201230 **Description:** Igneous and Metamorphic Rocks

Full Course Description: Igneous rocks, their origin, mineralogical and chemical classification, Magma evolution, characteristics, behavior and crystallization. Volcanoes, description of rock families, volcanic succession, phase rule and diagrams. Metamorphic rocks, grades and limits of metamorphism, factors promoting metamorphism, metamorphic faces, index minerals and minerals zones, metamorphic rocks classification. Field trip and laboratory applications.

Couse ID: 1201231 **Description:** Igneous & Metamorphic Rocks

Full Course Description:

Couse ID: 1201232 **Description:** Sedimentology & Stratigraphy

Full Course Description:

Couse ID: 1201233 **Description:** Stratigraphy

Full Course Description: Stratigraphy and sedimentology, Sedimentary rock types, clastic and nonclastic sedimentary rocks, their textures and primary sedimentary structures. Principles of stratigraphy, lithostratigraphy, biostratigraphy and chronostratigraphy. Vertical and lateral relationships, Field trip and laboratory applications.

Couse ID: 1201240 **Description:** The Universe

Full Course Description: The cosmology basic framework. The early universe and nucleosynrhesis. Friedman world models. The hot Big Bang Model. The expansion of the universe. Particles, forces, laws, spectra and the distance scale in the universe. Dark Matter. Inflation. Cosmological constants. The Large scale in the universe. Observatories and telescopes. Galaxies, their properties and origin.

Couse ID: 1201241 **Description:** The Universe

Full Course Description: The cosmology basic framework. The early universe and nucleosynrhesis. Friedman world models. The hot Big Bang Model. The expansion of the universe. Particles, forces, laws, spectra and the distance scale in the universe. Dark Matter. Inflation. Cosmological constants. The Large scale in the universe. Observatories and telescopes. Galaxies, their properties and origin.

Couse ID: 1201251 **Description:** Geomorphology

Full Course Description:

Couse ID: 1201255 **Description:** Geomorphology

Full Course Description: Geomorphologic cycle, sloping process and landforms. Drainage basin and drainage patterns. Fluvial and glacial process and land forms. Coastal landforms. Desert landforms. Field trip and Laboratory applications.

Couse ID: 1201312 **Description:** Biostratigraphy

Full Course Description: Biostratigraphic zonation, the relations between biostratigraphy and stratigraphy, biogeography, biomorphology, species through time and taxonomy. Types of biozones, correlation of zones and quantitative methods in biostratigraphy. Field trip and Laboratory applications.

Couse ID: 1201322 **Description:** Mineral & Environmental Resources

Full Course Description:

Couse ID: 1201323 **Description:** Minerals & Environmental Resources

Full Course Description: Classification of mineral resources, the origin of mineral resources, their economics and exploration, production and environmental impact of resources exploration and use. Energy resources including nuclear and geothermal energy, Metallic minerals. Jordan's mineral resources, Field trip and Laboratory applications.

Couse ID: 1201331 **Description:** Sedimentary Rocks

Full Course Description:

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1201334 **Description:** Sedimentary Rocks

Full Course Description: Sedimentary rocks, their mineralogical and chemical composition. Classification and their petrographic characteristics using the polarizing microscope. Processes of sedimentation, and depositional environments including terrestrial: fluvial, glacial, lacustrine, Aeolian and alluvial fans. Transitional environments; tidal and delta. Shallow and deep marine environments.Field trip and laboratory applications.

Couse ID: 1201350 **Description:** Structural Geology

Full Course Description: Primary and nontectonic structures, force and stress, Mohr circle, strain, deformation and rheology. Brittle structures, including joints and faults, and ductile structures namely; folds and folding. Determine time-structural events relationships. Field trip and Laboratory applications.

Couse ID: 1201351 **Description:** Structural Geology

Full Course Description:

Couse ID: 1201352 **Description:** Applied field Geology

Full Course Description:

Couse ID: 1201353 **Description:** Remote Sensing

Full Course Description: Electromagnetic waves, energy interaction with the atmosphere and earth surface, working remote sensing platforms and systems and their specification, digital image processing essentials, some selected applications of remote sensing in geological, agricultural and environment. Computer based laboratory applications.

Couse ID: 1201354 **Description:** Geology of Jordan

Full Course Description: The geologic setting of Jordan including stratigraphic sequences and structural framework; basement rocks; geologic rock units in the different eras; the Paleozoic, Mesozoic and Cenozoic eras. Minerals and ore deposits; Dead Sea: origin, salts and its economic importance. Geologic and natural hazards in Jordan. Several field trips to some geologic features in Jordan.

Couse ID: 1201357 **Description:** Subsurface Geology

Full Course Description:

The relationship between subsurface geology and other geological and geophysical disciplines. Subsurface evaluation and their sources. Correlation of stratigraphic sequences. Lithofacies and biofacies. Depositional environments. Recognition of ancient sedimentary environments , sedimentary structures and mineralogy. Subsurface contour and facies maps, and isopach maps using borehole data, Field trip and Laboratory applications.

Couse ID: 1201360 **Description:** Principles of Geophysics

Full Course Description: Geophysical science development and applications, main geophysical methods, including gravity, magnetic, resistively, seismic refraction and reflection, radiation their theoretical background and interpretation. The role of geophysics in solving environmental problems, exploration of ground water and minerals, selecting construction sites, Field trip and Laboratory applications.

Couse ID: 1201361 **Description:** Priniciples of Geophysics

Full Course Description:

Couse ID: 1201390 **Description:** Remote Sensing

Full Course Description:

Couse ID: 1201391 **Description:** Computer Applications in Geology

Full Course Description:

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1201393 **Description:** Computer Applications in Geology

Full Course Description: Using computer software and hardware in solving geological problems and tasks. Locating geosciences information on the internet. Use of spreadsheet programs, contouring, girding and interpolations programs, statistical analysis applications, and the work with graphics programs to produce geological maps, cross sections and other graphical representations of geological data.

Couse ID: 1201412 **Description:** Paleo Biology Environment

Full Course Description:

Couse ID: 1201421 **Description:** Economic Geology

Full Course Description: Physical and chemical characteristics and geologic and geographic setting of metallic ore deposits. Processes that contribute to ore formation. Description of classic deposits from the aspects of genesis, exploration, and mining. Laboratory consists of hand specimen study of host rock-ore mineral suites, mineral deposit evaluation problems.

Couse ID: 1201423 **Description:** Mining Geology & Environments

Full Course Description:

Couse ID: 1201432 **Description:** Industrial Rocks & Minerals

Full Course Description: Industrial rocks and minerals, their origin and classification, chemical and physical properties, production and uses. Industrial deposits; including, aggregates and constructional materials, clays, X-Ray Diffraction analysis, minerals for agriculture and chemical industry, evaporates, Glass, abrasives, refractories, cement and gemstones. Industrial materials in Jordan; locations, assessment, prospecting and mining.

Couse ID: 1201450 **Description:** Applied Field Geology

Full Course Description: Conducting a geological survey, field application of geological surveys, geological mapping of a selected area. Students will also become more oriented with stereoscope and interpretation of aerial photographs, effect of geological processes on the environment. The course is concluded with writing a geological report.

Couse ID: 1201451 **Description:** Geology of Jordan

Full Course Description:

Couse ID: 1201452 **Description:** Petroleum Geology

Full Course Description:

Couse ID: 1201453 **Description:** Geotectonics

Full Course Description:

Couse ID: 1201454 **Description:** Engineering Geology

Full Course Description:

Couse ID: 1201455 **Description:** Petroleum Geology

Full Course Description: Reservoir rocks, well logging distribution of gas, oil, and water in the reservoir, field water, crude oil, natural gas, oil traps, reservoir energy, oil generation and migration, subsurface geology, oil provinces in the Arab world, environmental pollution that results from petroleum products, and hydrocarbons possibilities Jordan.

Couse ID: 1201456 **Description:** Engineering Geology

Full Course Description: Fundamentals of engineering geology, stress-strain analysis, engineering properties of rocks, rock space masses, discontinuities in rock mass classification, strength of rocks and strength of rock masses, soil and rock slope stability, case studies from Jordan. Field trip and Laboratory applications.

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1201458 **Description:** Geotectonics

Full Course Description: Crustal types, heat flow, tectonic settings, arc systems, orogenic scenarios, structure of the mantle, the lithosphere, low velocity zone, asthenosphere, mantle plumes, inner and outer core, crustal and mantle evolution, plate tectonics development with time, continental growth rate, secular changes in the crust-mantle system.

Couse ID: 1201462 **Description:** Seismology

Full Course Description:

Couse ID: 1201463 **Description:** Environmental & Applied Geophysics

Full Course Description: The relation of geophysics with environment and exploration of natural resources, the geophysical methods applications in the environmental, engineering and exploration of metals and groundwater. Field trip and Laboratory applications.

Couse ID: 1201464 **Description:** Seismology

Full Course Description: Evolution of seismology, relation of seismology with other sciences and applications. Seismic waves, seismic monitoring, earthquake parameters determination, seismic waves path, seismicity of the Dead Sea transform fault system, the Arabian Plate and the world, assessment of seismic hazard & mitigation. Progress in earthquake predictions, Field trip and Laboratory applications.

Couse ID: 1201470 **Description:** Environmental Geochemistry

Full Course Description: Geochemical classification of elements, Geochemical cycle in the universe. Meteorites. Earth crust. Major and minor ions chemistry of the oceans. Crystal and mineral geochemistry. Geochemical weathering in the terrestrial environment. Geochemistry of the atmosphere. Biogeochemical cycles, Environmental stable and radiogenic isotope geochemistry, Laboratory applications.

Couse ID: 1201471 **Description:** Environmental Geochemistry

Full Course Description:

Couse ID: 1201484 **Description:** Geology & Waste Management

Full Course Description:

Couse ID: 1201490 **Description:** Field Training

Full Course Description: The training is addressed to the earth sciences researchers at the public sectors or the private companies. The topic of training routes are: geological mapping, exploration of natural resources utilizing Geophysical, geochemical, GIS techniques, and the role of earth sciences in site investigation and solving environmental problems

Couse ID: 1201491 **Description:** Special Topics

Full Course Description: Students will be directed to study one of the geo environmental problem of the local community. They will carry out field and lab work. After the interpretation of the data, the student is asked to submit a final report.

Couse ID: 1201492 **Description:** Seminar

Full Course Description: The student chooses one topic in one of the branches of the earth and environmental sciences, which is of interest to the department faculty members, and a presentation of half hour lecture using different teaching technologies. research report is submitted.

Couse ID: 1201493 **Description:** Statistical Geology

Full Course Description: Statistical methods and how these methods will be used in solving some geological problems. Probability and descriptive statistics, Hypothesis Testing, Relational Statistics such as correlation and regression. Sampling strategies and design, Interpolation Techniques. A practical part will includes some examples and geological data, spreadsheets programs and statistical packages will be used.

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1201494 **Description:** Cartography

Full Course Description: Science of cartography, its history, modern digital cartography, the art and science of visual communication with maps and the techniques of geographic visualization, map design, map reading, map analysis, the principles of data representation and map design for thematic and topographic mapping; practical applications of cartography in natural and environmental resources.

Couse ID: 1201495 **Description:** Geo-Statistics

Full Course Description:

Couse ID: 1201499 **Description:** Special Topics

Full Course Description:

Couse ID: 111201230 **Description:** Igneous & Metamorphic Rocks

Full Course Description: lk

Couse ID: 111201231 **Description:** Igneous & Metamorphic Rocks Lab

Full Course Description: jhg

Couse ID: 111201491 **Description:** Economic Geology

Full Course Description: df

Couse ID: 1712011101 **Description:** General Geology (1)

Full Course Description: Earth materials: minerals as a building unite of rocks, igneous rocks, weathering of rocks, sedimentary and metamorphic rocks; Earth's internal processes: plate tectonics, volcanic activity, earthquakes, geological structures, mountain building, origin of oceans and continents, geological time: principles of relative dating.

Couse ID: 1712011102 **Description:** General Geology (2)

Full Course Description: This course focuses on the basic concepts and principles in Earth Science and Oceanography. It introduces the student to the processes and forces that shape the earth, the geologic time, fossil remains, Global Ocean, and Earth Landscape.

Couse ID: 1712011103 **Description:** Practical General Geology (1)

Full Course Description: Crystal systems and forms, classification and physical properties of minerals. Classification, origin and properties of igneous, sedimentary and metamorphic rocks. Geological time scale and relative dating of geological events. One-day field trip.

Couse ID: 1712011104 **Description:** Practical General Geology (2)

Full Course Description: Directions, coordinate systems, topographic maps, the use of the geological compass, geological maps of horizontal, inclined and vertical layers, solving exercises and questions geological problems, 2 field trips and write reports.

Couse ID: 1712011205 **Description:** Astronomy

Full Course Description: The cosmology basic framework. The early universe and nucleosynthesis. Friedman world models. The hot Big Bang Model. The expansion of the universe. Particles, forces, laws, spectra and the distance scale in the universe. Dark Matter. Inflation. Cosmological constants. The Large scale in the universe. Observatories and telescopes. Galaxies, their properties and origin.

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1712011206 **Description:** Geomorphology

Full Course Description: Geomorphologic cycle, sloping process and landforms. Drainage basin and drainage patterns. Fluvial and glacial process and land forms. Coastal landforms. Desert landforms. Field trip and Laboratory applications.

Couse ID: 1712011207 **Description:** Geotops

Full Course Description: ggg

Couse ID: 1712011211 **Description:** Stratigraphy

Full Course Description: Stratigraphy and sedimentology, Sedimentary rock types, clastic and nonclastic sedimentary rocks, their textures and primary sedimentary structures. Principles of stratigraphy, lithostratigraphy, biostratigraphy and chronostratigraphy. Vertical and lateral relationships, Field trip and laboratory applications.

Couse ID: 1712011212 **Description:** Paleontology

Full Course Description: The origin of life and importance of fossils and the invertebrate fossil groups. Student will be introduced to the fossil group; trilobites, graptolites, brachiopods, molluscus, and echinoderms, laboratory applications.

Couse ID: 1712011221 **Description:** Mineralogy

Full Course Description: Mineralogy, crystallography, stereographic projection, crystal classification, chemistry of minerals and physical properties of minerals. X-rays, polarized microscope, scanning electron microprobe in mineralogy and the systematic classification of minerals, rock-forming minerals, Field trip and laboratory applications.

Couse ID: 1712011222 **Description:** Optical Mineralogy Lab

Full Course Description: This course deals with the properties of light and how it interacts with a mineral by using polarized microscope. Identifying the most common minerals in igneous, metamorphic, and sedimentary rocks based depends on their optical properties those are: color, pleochriosm, fracture and cleavage, birefringence and order of interference colors, opaque, isotropic, and anisotropic minerals, relief, extinction types and angles, interference figures, twining types, zoning and exsolution phenomena, chemical alteration products, and mineral inclusions.

Couse ID: 1712011241 **Description:** Natural Hazards

Full Course Description: This course introduces the student to Earth: systems and cycles, natural hazards: earthquakes, volcanic eruptions, tsunami, mass wasting, sinkholes, flooding, disasters caused be atmosphere and hydrosphere, meteorites impacts, fossil fuel and energy alternative resources, water resources.

Couse ID: 1712011291 **Description:** Remote Sensing

Full Course Description: Electromagnetic waves, energy interaction with the atmosphere and earth surface, working remote sensing platforms and systems and their specification, digital image processing essentials, some selected applications of remote sensing in geological, agricultural and environment. Computer based laboratory applications.

Couse ID: 1712011313 **Description:** Biostratigraphy

Full Course Description: Biostratigraphic zonation, the relations between biostratigraphy and stratigraphy, biogeography, biomorphology, species through time and taxonomy. Types of biozones, correlation of zones and quantitative methods in biostratigraphy. Field trip and Laboratory applications.

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1712011314 **Description:** Sequence Stratigraphy

Full Course Description: The course deals with the relationship between sea-level changes and rate of sedimentation, causes of sea-level fluctuations, erosion and sedimentation processes in the sedimentary basin, cyclicity in sedimentary rocks relative to transgressions and regressions, subdivision of the sedimentary sequence into it's main parts relative to the sea-level changes, components of systems tracts of exposed and subsurface rocks, describing and interpreting different borehole logs, methods of drawing lithologic logs using seismic stratigraphy, applications of sequence stratigraphy in sedimentary basin analysis.

Couse ID: 1712011323 **Description:** Mineral & Environmental Resources

Full Course Description: Classification of mineral resources, the origin of mineral resources, their economics and exploration, production and environmental impact of resources exploration and use. Energy resources including nuclear and geothermal energy, Metallic minerals. Jordan’s mineral resources, Field trip and Laboratory applications.

Couse ID: 1712011331 **Description:** Igneous & Metamorphic Rocks

Full Course Description: Igneous rocks, their origin, mineralogical and chemical classification, Magma evolution, characteristics, behavior and crystallization. Volcanoes, description of rock families, volcanic succession, phase rule and diagrams. Metamorphic rocks, grades and limits of metamorphism, factors promoting metamorphism, metamorphic faces, index minerals and minerals zones, metamorphic rocks classification. Field trip and laboratory applications.

Couse ID: 1712011332 **Description:** Sedimentology

Full Course Description: Sedimentary rocks, their mineralogical and chemical composition. Classification and their petrographic characteristics using the polarizing microscope. Processes of sedimentation, and depositional environments including terrestrial: fluvial, glacial, lacustrine, Aeolian and alluvial fans. Transitional environments; tidal and delta. Shallow and deep marine environments. Field trip and laboratory applications.

Couse ID: 1712011351 **Description:** Structual Geology

Full Course Description: Primary and nontectonic structures, force and stress, Mohr circle, strain, deformation and rheology. Brittle structures, including joints and faults, and ductile structures namely; folds and folding. Determine time-structural events relationships. Field trip and Laboratory applications.

Couse ID: 1712011361 **Description:** Principles of Geophysics

Full Course Description: Geophysical science development and applications, main geophysical methods, including gravity, magnetic, resistively, seismic refraction and reflection, radiation their theoretical background and interpretation. The role of geophysics in solving environmental problems, exploration of ground water and minerals, selecting construction sites, Field trip and Laboratory applications.

Couse ID: 1712011392 **Description:** Field Geotechnical Applications

Full Course Description: Topographic and contour maps and geological maps, aerial photography, geological sections measuring techniques, fossils collection, identification, and grouping. Several field trips.

Couse ID: 1712011396 **Description:** Computer Applications in Geology

Full Course Description: Using computer software and hardware in solving geological problems and tasks. Locating geosciences information on the internet. Use of spreadsheet programs, contouring, girding and interpolations programs, statistical analysis applications, and the work with graphics programs to produce geological maps, cross sections and other graphical representations of geological data.

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1712011433 **Description:** Economic Geology

Full Course Description: Physical and chemical characteristics and geologic and geographic setting of metallic ore deposits. Processes that contribute to ore formation. Description of classic deposits from the aspects of genesis, exploration, and mining. Laboratory consists of hand specimen study of host rock-ore mineral suites, mineral deposit evaluation problems.

Couse ID: 1712011434 **Description:** Geology of Jordan

Full Course Description: The geologic setting of Jordan including stratigraphic sequences and structural framework; basement rocks; geologic rock units in the different eras; the Paleozoic, Mesozoic and Cenozoic eras. Minerals and ore deposits; Dead Sea: origin, salts and its economic importance. Geologic and natural hazards in Jordan. Several field trips to some geologic features in Jordan.

Couse ID: 1712011435 **Description:** Oil Shale

Full Course Description: Oil shale definition, classification and origin. Oil shale petrography and lithology. Organic and inorganic geochemistry of oil shale. Global distribution of oil shale deposits. Oil shale exploration methods. Mining of oil shale. Extraction technologies of shale oil from oil shake. Other utilization methods. Environmental impact of oil shale mining and utilization. Geology of Jordanian oil shale. Status of oil shale utilization in Jordan.

Couse ID: 1712011436 **Description:** Industrial Materials

Full Course Description: Industrial rocks and minerals, their origin and classification, chemical and physical properties, production and uses. Industrial deposits; including, aggregates and constructional materials, clays, X-Ray Diffraction analysis, minerals for agriculture and chemical industry, evaporates, Glass, abrasives, refractories, cement and gemstones. Industrial materials in Jordan; locations, assessment, prospecting and mining.

Couse ID: 1712011452 **Description:** Engineering Geology

Full Course Description: Fundamentals of engineering geology, stress-strain analysis, engineering properties of rocks, rock space masses, discontinuities in rock mass classification, strength of rocks and strength of rock masses, soil and rock slope stability, case studies from Jordan. Field trip and Laboratory applications.

Couse ID: 1712011453 **Description:** Geotectonics

Full Course Description: Crustal types, heat flow, tectonic settings, arc systems, orogenic scenarios, structure of the mantle, the lithosphere, low velocity zone, asthenosphere, mantle plumes, inner and outer core, crustal and mantle evolution, plate tectonics development with time, continental growth rate, secular changes in the crust-mantle system.

Couse ID: 1712011454 **Description:** Rock Mechanics

Full Course Description: Studying mechanical behavior of rocks and rock masses. Mechanical responses to all geological materials, application of the principles of engineering mechanics to the design of rock blocks resulting from mining or drilling or the production of reserves or civil construction activities, such as tunnel construction and mining corridors and underground excavations, mines, oil and gas wells, road shortcuts, waste dumps and other structures etched in Rocks or built-up ones. They also include the design of reinforcement systems, such as patterns of rock formations. Rock mass classification, rock tunneling design.

Couse ID: 1712011462 **Description:** Enviornmental & Applied Geophysics

Full Course Description: The relation of geophysics with environment and exploration of natural resources, the geophysical methods applications in the environmental, engineering and exploration of metals and groundwater. Field trip and Laboratory Applications.

Courses Description

College: Prince El- Hassan Bin Talal For Natural Resources & Environment

Department: Earth & Environmental Sciences

Couse ID: 1712011463 **Description:** Seismology

Full Course Description: Evolution of Seismology, relation of seismology with other sciences and applications. Seismic waves, seismic monitoring, earthquake parameters determination, seismic waves path, seismicity of the Dead Sea transform fault system, the Arabian Plate and the world, assessment of seismic hazard & mitigation. Progress in earthquake predictions, Field trip and Laboratory applications.

Couse ID: 1712011464 **Description:** Well Logging

Full Course Description: Includes related geophysical exploration methods and methods of well logging and fundamentals. The petrophysical analysis of subsurface facies, seismic, electric and radiation and their manipulations, and linked to the physical properties of rocks and subsurface geological structures. Interpretation of 2D's, and 3D's seismic sections in relating to well log data. Application and analyses of real data using specialized software's and prepare a technical report.

Couse ID: 1712011471 **Description:** Environmental Geochemistry

Full Course Description: Geochemical classification of elements, Geochemical cycle in the universe. Meteorites. Earth crust. Major and minor ions chemistry of the oceans. Crystal and mineral geochemistry. Geochemical weathering in the terrestrial environment. Geochemistry of the atmosphere. Biogeochemical cycles, Environmental stable and radiogenic isotope geochemistry, Laboratory applications.

Couse ID: 1712011494 **Description:** Petroleum Geology

Full Course Description: Reservoir rocks, well logging distribution of gas, oil, and water in the reservoir, field water, crude oil, natural gas, oil traps, reservoir energy, oil generation and migration, subsurface geology, oil provinces in the Arab world, environmental pollution that results from petroleum products, and hydrocarbons possibilities Jordan.

Couse ID: 1712011495 **Description:** Applied Field Geology

Full Course Description: Conducting a geological survey, field application of geological surveys, geological mapping of a selected area. Students will also become more oriented with stereoscope and interpretation of aerial photographs, effect of geological processes on the environment. The course is concluded with writing a geological report.

Couse ID: 1712011496 **Description:** Mining and mineral Prospecting

Full Course Description: The relationship between subsurface geology and other geological and geophysical disciplines. Subsurface evaluation and their sources. Correlation of stratigraphic sequences. Lithofacies and biofacies. Depositional environments. Recognition of ancient sedimentary environments, sedimentary structures and mineralogy. Subsurface contour and faciesmaps, and isopach maps using borehole data, Field trip and Laboratory applications.