

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

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| Course name | General Geology |
| Course number | GEOL1301 |
| Faculty | |
| Department | |
| Course type | College Needs |
| Course level | 1 |
| Credit hours (theoretical) | 3 |
| Credit hours (practical) | 0 |
| Course Prerequisites | |

Course Objectives

- 1 - This course introduces the basic knowledge about the origin , development, component, material, and structure of the solid Earth
- 2 - Introduce students to earth materials: minerals and rock
- 3 - . Introduction of the fundamental geologic processes that are dynamically involved in the formation of planet earth
- 4 - Use an understanding of the rock cycle, plate tectonics and surface processes to explain how the Earths surface wears away and is renewed
- 5 - Use an understanding of geologic dating methods and the interpretation of geologic deposits to explain how geologists reconstruct the history of the Earth
- 6 - Access earth science information from a variety of sources, evaluate the quality of this information,
- 7 - Fundamentals of physical geology are covered, which support further study in the Earth and Natural Science

Intended Learning Outcomes

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| Knowledge and Understanding | <ul style="list-style-type: none">* This course aims to provide students with the essential knowledge to understand the external and internal processes of the earth, internal and surface composition of the earth, geologic structures, geologic history* To understand the world in which we live we need to understand geology* The course provides basic information to identify the components of the planet on which we live. In addition the course demonstrates different geologic information, hazards and economic aspect |
| Intellectual Skills | <ul style="list-style-type: none">* Use an understanding of the rock cycle, plate tectonics and surface processes to explain how the Earth's surface wears away and is renewed* Access earth science information from a variety of sources, evaluate the quality of this information |
| Professional Skills | <ul style="list-style-type: none">* Students will demonstrate acceptable knowledge of geologic information by scoring a minimum grade on a standardized test of geologic knowledge* Students will demonstrate acceptable knowledge of geologic information by scoring a minimum grade on a standardized test of geologic knowledge |
| General Skill | <ul style="list-style-type: none">* Use an understanding of the rock cycle, plate tectonics and surface processes to explain how the Earth's surface wears away and is renewed* Introduce students to earth materials: minerals and rock |

Course Contents

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| <ol style="list-style-type: none">1 - Introduction to Geology, the structure of the Earth and the Rock Cycle2 - Matter and Minerals3 - Igneous Rocks4 - Metamorphic Rocks5 - Sedimentary Rocks6 - Factors forming and shaping the Earth surface7 - General geologic structures8 - Plate Tectonic9 - Earthquake and Volcanos10 - Principles of Relative Dating and Absolute Dating11 - Geological Time Scale |
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Teaching and Learning Methods

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| <ol style="list-style-type: none">1 - The course will have as many of the following components as feasible: lectures, discussions, lab activities, videos, slides, field trips, and computer-aided instruction and animation2 - The text and materials for the course have been chosen by the department, and reviewed by the lecturer3 - A digital copy of the lecture notes is available on the lecturer webpage4 - The course will have as many of the following components as feasible: lectures, discussions, lab activities, videos, slides, field trips, and computer-aided instruction and animation5 - The text and materials for the course have been chosen by the department, and reviewed by the lecturer6 - A digital copy of the lecture notes is available on the lecturer webpage |
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Students Assessment

| <u>Assessment Method</u> | <u>TIME</u> | <u>MARKS</u> |
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| The following methods of assessment are used: exams, quizzes, lab exercises, written reports, oral presentations, group projects, class participation, and field trips | | |
| First midterm exam | after 6 weeks | 20 points |
| Second Midterm exam | After 12 weeks | 20 points |
| Final exam | 15-16 weeks | 50 |
| Class participation | From the first week of semester | 10 points |

Books and References

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| Course note | A digital copy of the lecture notes is available on the lecturer webpage |
| Essential books | Earth. An Introduction to Physical Geology, by Edward J. Tarbuck Principles of geology by James Gilluly The dynamic earth introduction to physical geology by Brian J. Skinner |
| Recommended books | Physical geology: exploring the earth by James S. Monroe Physical geology earth revealed by David Mcgeary Environmental geology by Carla W. Montgomery Physical geology by Charles C. Plummer |

Knowledge and Skills Matrix

| Main Course Contents | Study Week | Knowledge and Understanding | Intellectual Skills | Professional Skills | General Skill |
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| Introduction to Geology, the structure of the Earth and the Rock Cycle | 1st week | Earth interior Structure | Earth layers and characteristics | Different in Characteristics between Earth interior Structure | Earth Structure and Characteristics |
| The Rock Cycle | 2ed week | The Rock Cycle, the main types of rock: Igneous , Metamorphic , nad Sedimentary | Process to transform one rock to another | ,Different between solidification and crystallization Weathering, Lithification, and Cementation Metamorphism and Melting | How rock cycle works Transformation one rock to another |
| Minerals and Matter | 3ed and 4th weeks | Properties of Minerals , Crystal and Crystallography | Physical and chemical properties of Minerals Crystal forms and Systems | Optical and cohesive properties of minerals Chemical structure and groups of minerals | Differentiate between Minerals based on the Physical and Chemical properties |
| Igneus Rock | 5th and 6th week | Definition of Igneous rocks Types and origin Characteristics Textures | Extrusive, Intrusive and Plutonic Igneous Rock Chemical based Classification of Igneous Rock | Main Characteristics of Extrusive Igneous rock Main Characteristics of Intrusive Igneous rock Main Characteristics of Plutonic Igneous rock | Main Characteristics and Classification of Igneous rock texture and the relationship between texture and occurrence |
| Metamorphic Rocks | 7th week | Types and origin of Metamorphic rocks Examples of Metamorphic rocks Metamorphism | Metamorphism Process and conditions Texture of metamorphism | Main Characteristics of Regional and Thermal Metamorphism | Type and agents of Metamorphism Texture |

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| Sedimentary Rocks | 8th , 9th week | Origin of Sedimentary rocks Weathering and Erosion Classification of Sedimentary rock Texture of Sedimentary Rock Primary Structure in Sedimentary rock | Lithification of Sediments Factor and material of cementation Porosity and remediability | Types of Sedimentary rocks Texture of clastic sedimentary rock factors affecting in porosity and permeability | Characteristics of Sedimentary Rocks Texture and Environments Porosity Weathering processes Structure in sedimentary rocks |
| Plate Tectonic | 10th, 11th week | Plate Tectonic Theory Evidence of continental drifts theory Tectonic Boundaries | Plate tectonic mechanism Tectonic Boundaries: Convergent, Divergent, and transform faults | Results of convergent boundaries Results of Divergent boundaries and Seafloor Spreading | Understanding the theory of Plate Tectonic and Continental Drifts Tectonic boundaries |
| Geological Structures | 12th, 13th week | Understanding the main Geological Structures Faults and Folds types of Folds and Faults | Rock behaviour and the forces that form normal and reverse faults Different between brittle and ductile deformation types of Folds | Recognize different faults types Recognize different fold types | Faults parts and components fold parts and components Types of faults and folds classification of folds |
| Earthquake and Volcano | 14th week | Earthquake origin and disasters Detection and measuring Earthquake magnitude Volcano Parts and Types | Faults and Earthquake Seismograph and Epicenter Volcano types and Lava characteristics | The main reason for earthquake Measuring Earthquake Strength Types of Volcanos | General Information about how Earthquake happens the structure of normal volcano types of volcano and lava characteristics |

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| Principles of rock dating methods | 15th week | Principles of rock dating including Relative dating and absolute Dating | superposition, crosscutting relationship, inclusion, lateral extension, and original horizontality C14 and U235 dating methods | How to determine the rock age based on the relative dating principles Dating with radioactive materials | the general principles of rock dating and the different methods of absolute dating |
| Geological Time Scale | 16th week | the main units of the Geological Time Scale | Different between the Geological Time units the most important events through the geological time | Geological Time units | Different between the Geological Time units the most important events through the geological time |