Course Specifications

General Information

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

Knowledge and Understanding	* 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	* 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	* Students will demonstrate acceptable knowledge of geologic information by scoring a minimum grade on a standardized test of geologic knowledge
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General Skill	* 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

1 - Introduction to Geology, the structure of the Earth and the Rock Cycle
2 - Matter and Minerals
3 - Igneous Rocks
4 - Metamorphic Rocks
5 - Sedimentary Rocks
6 - Factors forming and shaping the Earth surface
7 - General geologic structures
8 - Plate Tectonic
9 - Earthquake and Volcanos
10 - Principles of Relative Dating and Absolute Dating
11 - Geological Time Scale

Teaching and Learning Methods

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 animation
2 - The text and materials for the course have been chosen by the department, and reviewed by the lecturer
3 - A digital copy of the lecture notes is available on the lecturer webpage
4 - 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 animation
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Students Assessment

Assessment Method	TIME	MARKS
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

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
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

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 Drifs 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

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 mist important events through the geological time	Geological Time units	Different between the Geological Time units the mist important events through the geological time