Course Specifications

General Information

Course name	Historical Geology
Course number	GEOL2304
Faculty	
Department	
Course type	Major Needs
Course level	2
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - Historical Geology provides the student with a comprehensive survey of the history of life, and major events in the physical development of Earth

2 - How processes like plate tectonics and climate interact with life, forming an integrated system

3 - . Chronological overview of major geological, biological and physical events in different geologic period

4 - The geological time scale units and relationships between events that have occurred throughout Earth's history: Geology and Paleontology

Intended Learning Outcomes

Knowledge and Understanding	* After completing this course student will be able to understand the Geological Time Scale and its components
Intellectual Skills	* Student will be able to associate geologic features with geologic events * Students will able to use the principles of relative dating to determine the rock age
Professional Skills	* Student will be able to recognize & identify earth material * Student will be able to identify key fossils
General Skill	* Student will be able to understand the chronological evaluation and development of the earth continents and paleontology * Student will be able to successfully read and interpret geologic maps

Course Contents

1 - An Overview of plate tectonic and structures
2 - Age of earth; Absolute versus Relative
3 - Unconformities
4 - Transgression and regression sequences
5 - Fossilization
6 - Climatic change and sea-level fluctuation
7 - Geological Time Column: Precambrian Eon
8 - Phanerozoic Eon
9 - Early Paleozoic Era
10 - Late Paleozoic Era
11 - Mesozoic Era
12 - Cenozoic Era
13 - Pliestocene/Holocene Epochs
14 - Orogenic activities: Mountain building movements
15 - Tethys closure, Gulf of Aden, and Alpine-Himalayan mountains

Teaching and Learning Methods

1 - Lectures will be interactive and will involve use of power point presentations, blackboard, and group discussions
2 - Three hours a week, 2 hours for lecture meeting and one hour for lab
3 - Attendance in lectures and labs is essential. For some reason, if you can not be present for a lecture or lab, please let me know in advance and make arrangements for make up of the time

Teaching and Learning Methods for the Disabled Students

1 - Students with Disabilities Statement are given the equal access to the educational experience for all students

Students Assessment

Assessment Method	TIME	MARKS
Midterm Exam	7th week	20
Lab Final Exam	14th week	25
Lab assignments and exercises	14th week	5
Final exam	16th week	50

Books and References

Course note	Lecture Notes
	Historical geology: manual of laboratory exercises by Forbes Robertson
Essential books	The changing earth : exploring geology and evolution by James S. Monroe
Recommended books	The key to earth history: an introduction to stratigraphy by Peter Doyle
	Earth. An Introduction to Physical Geology by Edward J. Tarbuck

Knowledge and Skills Matrix

Main Course Contents	Study Week	Knowledge and Understanding	Intellectual Skills	Professional Skills	General Skill
An Overview of plate tectonic and structures	1st	Earth Structure and History Continental Drift theory Tectonic Boundaries	Evidence of Plate Tectonic Paleogeography Types of Tectonic Boundaries	Types of Tectonic Boundaries Paleo-magnetism Polar Wandering	Understanding the nature of the continents and evidence and mechanisms of continental drift theory
Age of earth; Absolute versus Relative	2nd	The General Principles of Relative Dating and Absolut Dating	Determining the order of rock formation based on the relative dating principles Determining the age of rocks using radioactive elements	The Principle of Uniformitarianism Sedimentation rate Cooling rate of the Earth	Estimate the age of the Earth and rock formation Half-lives and parent: daughter
Unconformities	3rd	Understanding the concept of Unconformity or a gap in the geological record	Paleontologiccriteria for recognizing unconformities Sedimentary criteria for recognizing unconformities Structural criteria for recognizing unconformities	Nonconformity Angular conformity Disconformity	Types of Unconformaties
Transgression and Regression Sequences	4th	Understanding the Transgression and Regression Sequences	The effect of sea-level rise and fall on transgression and regression	Sediment types and Transgression and Regression Sequences	Understanding the Transgression and Regression Sequences
Climatic change and sea-level fluctuation	5th	Understanding the relation between sea-level fluctuations and coastal zones Types of sea-level changes	Types of sea-level changes	Local sea-level changes World-wide (eustatic) sea-level changes	Changes in Global sea-level through time
Fossilization	6th	Understanding the defination of Fossil Types of fossilisation	The processes of fossilization	Preservation of unaltered soft parts Preservation of unaltered hard parts	Common preservation methods

Geologic column: Precambrian Eon	7th	Understanding the important events in Precambrian	The Hadean, the Archean and the Proterozoic	The most common Precambrian fossils	Understanding the important events in Precambrian Paleogeography
Phanerozoic Eon and Early Paleozoic Era	8th -9th	Life in the early Paleozoic time Events and rocks Paleogeography	The Cambrian, Ordovician, and Silurian periods	Life in the early Paleozoic time Events and rocks Paleoggeography	Life in the early Paleozoic time Events and rocks Paleoggeography
Late Paleozoic Era	10th	:Understanding the late Paleozoic periods the Devonian, Carboniferous(Mississippian, Pennsylvanian), and Permian	Laurasia and Gondwanamoved TheAppalachians CarboniferousCoal	Understanding the general characteristics of Late Paleozoic Life and Geology	:Understanding the late Paleozoic periods the Devonian, Carboniferous(Mississippian, Pennsylvanian), and Permian
Cenozoic Era	13th – 14th				
Mesozoic Era	11th - 12th				
Pliestocene/Holocene Epochs and Orogenic activities: Mountain building movements	15th				
Tethys closure, Gulf of Aden, and Alpine-Himalayan mountains	16th				