

## **SGL 519: MARINE GEOLOGY STUDY GUIDE**

**ACADEMIC YEAR 2013/2014 – 1<sup>st</sup> Semester**

Lecturer: Prof. Eric Odada

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### **Aim:**

This course is designed for students who have taken introduction to marine geology (SGL 408) in their undergraduate studies. The lectures commence with a historical look at marine geology, the physical structure of the oceans and the oceanic sediments. Investigation techniques and mineral resources of the sea follow these lectures. In the final stages of the lectures, the focuses on the ocean history and climate events that have been recorded in ocean sediments providing a holistic study of the ocean. The tutorials focus on the basic principles of the oceans' physical properties and its composition as well as scientific communication and writing that forms part of the student assessment.

### **Recommended Reading:**

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|---|------------------|
| 1. Geology and Mineral Resources of the Oceans    | E. O. Odada      |
| 2. Seafloor Spreading (Introd. To Marine Geology) | Seibold & Berger |
| 3. Marine Geology                                 | James Kennett    |
| 4. Underwater Minerals                            | David Cronan     |
| 5. Oceanography Course                            | Open University  |
| 6. Introduction to Oceanography                   | David Ross       |
| 7. Marine Geochemistry                            | Roy Chester      |

### **Lecture program:**

This course consists of 7 key lecturers that introduce the students to all aspects of Geochemistry. *(This unit is taught in the first semester if there are students who have selected the course and therefore, the dates and timings have not been scheduled on the timetable)*

LNo	Date	Time	MAIN SUBJECT	SUBJECT COMPONENTS
1			<b>INTRODUCTION</b>	<ul style="list-style-type: none"><li>• History of Marine Geology</li><li>• Morphology of Oceans</li><li>• Stratigraphy of Oceans</li></ul>
2			<b>TECTONIC HISTORY AND PROCESSES</b>	<ul style="list-style-type: none"><li>• Tectonic History of Oceans</li><li>• Surface and deep ocean circulation</li><li>• Near shore geological processes</li></ul>
3			<b>OCEAN MARGINS</b>	<ul style="list-style-type: none"><li>• Continental shelf, slope and deep sea floor;</li><li>• Mid-ocean ridges and subduction zones</li></ul>

4			<b>OCEANIC SEDIMENTS</b>	<ul style="list-style-type: none"> <li>• Oceanic sediments and microfossils</li> <li>• Terrigenous sediments</li> <li>• Biogenic sediments</li> <li>• Authigenic sediments</li> <li>• Geological effects of bottom currents</li> <li>• Oceanic microfossils: calcareous and siliceous</li> </ul>
5			<b>OCEANIC HISTORY AND CLIMATIC EVOLUTION</b>	<ul style="list-style-type: none"> <li>• Oceanic history including palaeoceanography, sediment history of ocean basins</li> <li>• Palaeoceanographic evolution including critical events in oceanic history</li> <li>• Palaeoclimatic history of the oceans including warm and cold oceans, Mediterranean salinity crisis, Ice Age and glacial final</li> </ul>

**Practical/tutorial program** - The program is based on the lectures that have been conducted and are as follows:

SESSION	MAIN SUBJECT
1	THE USE OF GOOGLE EARTH IN OCEAN EXPLORATION
2	STRUCTURE OF OCEANS – TUTORIAL
3	PLATE TECTONICS AND SEA FLOOR SPREADING TUTORIALS
4	SCIENTIFIC READING AND WRITING
5	OCEANIC SEDIMENTS TUTORIAL
6	PALAEOCENOGRAPHY AND CLIMATE TUTORIAL

**Assessment:** The assessment of this course is through at least one Continuous Assessment Test, homework, Term paper and group discussion and presentation. The allocation of assessment marks is as per the guidelines provided in the University of Nairobi, School of Physical Sciences statutes.

Class mark:.....30%

CAT (10%)

Term paper (10%)

Homework (5%)

Group work (5%)

Exam mark: .....70%