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**Department of: Earth Sciences Petroleum**

**College of Science**

**University of (Salahaddin)**

**Subject: Historical Geology**

**Course Book – (Year 1)**

**Lecturer's name Dr. Dana Noory Ridha**

**Academic Year: 2022/2023**

**Course Book**

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| **1. Course name** | **Historical Geology**  |
| **2. Lecturer in charge** | **Dana Noory Ridha**  |
| **3. Department/ College** | **Earth Sciences and Petroleum**  |
| **4. Contact** | **e-mail: dana.ridha@su.edu.krd** **Tel: (optional)** |
| **5. Time (in hours) per week**  | **For example, Theory: 2** **Practical: 8**  |
| **6. Office hours** | **Availability of the lecturer to the student during the week** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | Worked as a demonstrator since 2001, Accepted in M.Sc in 2003, and graduated in 2006. I have a long experience in micropaleontology as I started to do my MSc focusing on palynology and microfacies analysis on the successions during the late Palaeozoic in northern Iraq. My experience started in 2003. Later I tried to learn more and include mineralized wall microfossils, especially foraminifera. My Ph.D. started in 2015 at the University of Birmingham. It was a big opportunity for me to add a new knowledge and experiences. I qualified successfully in 2020. I have participated in many workshops and summer schools during my Ph.D. in UK, Italy, and France. Doing poster presentations and talks in the UK in different Universities such as Birmingham and Leeds.  |
| **9. Keywords**  | **Hearth’s history, geological times, dating, trace fossils, preservations ------- etc.**  |
| **10. Course overview:** This course been prepared for the undergraduate (first year) students. Imagine all the stories students have not heard. The stories one could hear if you could speak every language in the world, and sit across the table from people with fundamentally different experiences, speaking of ancient times and exotic places. Their stories might change the way student look at the world. They might change the way the students live their life.The main concepts of this course are to show the students different stories that have been recorded in the rocks for millions of years. Any climatic, biotic and environmental changes have been very well reported within the earth. The main key for studying these events and interpreting all the phenomena that have been observed in the earth will be better understanded if we would be able to study the sedimentary rocks. The fossil preservation within the sedimentary rocks could be able to answer many questions especially the rocks age, climate, environments and the nature of the habitats that they were lived. The way that the fossil been preserved, all the alterations that happened to them may have evidenced many changes that has been observed in our planet.All sedimentary structures, stratigraphic relation ship could be able also to help students to understand the nature of all recorded events.   |
| **11. Course objective:**The main objective of this course is to study the earth’s history. Earth investigates the major physical and biological events of the geologic past, with a major focus on evidence for ancient life and how, why, and when it has changed through time.Better understanding all the stratigraphic rules that arrange all geological events in order.Earth’s events have been recorded in the sedimentary rocks, and each rock has been ordered uniformly from older to younger. Understanding and arranging all these events may help students learn how and why these events happened to the earth. We could be able to show our students the role of the fossils to help them figure out and report all the geological events. |
| **12. Student's obligation (students must do the following during the starting lesson)*** Closing the mobile phone before entering the hall
* being ready to hear the lecture
* sitting down and don’t talk especially during explanation
* student must discuss and ask about all information that they can’t understand
* students must read the required or text books to compare with lecture that you receive
* Avoid any interruption unless it has been permitted by the lecturer
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| **13. Forms of teaching**1- Power Point presentations2- Explanations on white board whenever it is necessary 3- Classroom discussions and participation 4- printing out the lectures so as to be easy to follow the teacher  |
| **14. Assessment scheme**‌For the annual quest 35% will be for practical including the weekly report, examinations quiz, and other activities. While the 15% will be for the exam which is on 10 marks and the rest will be for field report and quiz. The final examination will on 50 marks which is only for theory, this will be added to the annual quest to give us the marks on 100.  |
| **15. Student learning outcome:**The usefulness of this course is to give a fundamental information needed for the first-year students. This course is only educational and can be a key for all the modules that will be taken by students in the future. Some topics will be only given to our students to make them ready to understand the main concepts of the geology. Any modules the year one students take will be only for preparing them for the next year.   |
| **16. Course Reading List and References‌:**1- Historical Geology (<https://opengeology.org/historicalgeology/what-is-historical-geology/>)2- Historical Geology (<https://www.perlego.com/book/801916/historical-geology-pdf>)3-Interpreting Earth History: A Manual in Historical Geology [8th (Eighth Edition)]Scott Ritter and Morris Petersen, 2015. 4- Historical Geology , Carl , O. Dunbar (https://archive.org/details/dli.ernet.17826/page/n3/mode/2up) |
| **17. The Topics:** | **Lecturer's name** |
|  Week 1: the main concepts of the historical geology and the formation of our planet. Week 2 &3: Geological time scales and the earth dating. Week 4: Stratigraphy and their principals. Week 5: common categorical ichnofacies. Week 6: fossil preservations and their types.Week 7: The Precambrian life.Week 8: The Permian life, Triassic, Jurassic and Cretaceous life. showing environmental and climate changes. Week 9: Tertiary Period (this has included this time lives, environment and climate).Week 10: Tertiary Life started from Eocene until recent time.  | Dana Noory Ridha (2 hrs) + 8 hours practicalThis course started at the beginning of the February 2023 and ended in the mid of the April.  |
| **18. Practical Topics (If there is any)** |  |
| The practical course has been prepared by Mr. Abdulla in his course the students learn how to create a contour map, plotting the stratigraphic cross section, learning and plotting the horizontal and vertical beds, -------etc.  | Abdulla Talaat  (8 hrs) per week  |
| **19. Examinations:****\* Here we will show some examples of theoretical exams:****Q.** **Fill in the blank with the correct answer:** 1-The main topics studied in Earth history are -----------------, ------------------, and paleoecology and [paleoclimatology](https://opengeology.org/historicalgeology/paleoclimatology-earth-systems-change-through-time/)—respectively.2-The universe appears to have an infinite number of galaxies and -------------------. 3-The big-bang theory proposes the ---------------- was formed from an infinitely dense and hot core of material.4-The bang in the title suggests there was an explosive, outward --------------- of all matter and space that created ---------------.5- A relative sequence of the lithologic units established using -----------------------. 6- Tertiary are divided into Palaeogene and Neogene, however the Palaeogene intern divides into -------------------, -------------------- and -------------------- epochs.**Q.: Answer by true or false**1-Unconformities are a time when rocks were not deposited or were eroded. 2-Determination of sedimentation rates and comparison is not a part of earth’s age determination. 3- Radioactive isotope change into daughter isotopes at known rates. 4- Some sediments are deposited at the same time within a basin, and within a same depositional environment.5-Magnetostratigraphy relies on special properties in the rocks to correlate them across distances.**Q.:** **Match the statements in the Set X with the statements in the Set Y.**

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| **Set X** | **Set Y** |
| 1- Unaltered mineralized remains.  | a-Is the Chronostratigraphic designation of Phanerozoic Eon.  |
| 2- Ediacara fauna.  | b-The mineralized hard parts of some animals are commonly preserved intact, and unchanged over millions of years. |
| 3- The Silurian Period.  | c-The layer on the bottom is oldest, those above are younger. |
| 4- Law of superposition.  | d-This Period is sometimes called “Age of Fishes”.  |
| 5- The Devonian Period.  | e-It appeared earlier (more than 600 million years ago). |
| 6- Formation.  | f-Is the last of the three periods of the Mesozoic Era.  |
| 7- Phanerozoic Eonothem.  | g-The expansion of the brachiopods, and the oldest known fossils of coral reefs. |
| 8- Cretaceous Period.  | h-Is a mappable lithostratigraphic unit. |

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| **20. Extra notes:**There are no extra notes. |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |