

Course details: **GEOL 1306:** Historical Geology

Co-requisite: **GEOL 1106**
Pre-requisite: GEOL 1305/1105 (Physical Geology)

Required materials: **Textbooks.**
Stanley, Steven M., 2009. Earth system history (third edition): New York, W. H. Freeman and Company, 551 p. ISBN 978-1-4292-0520-7.

Other materials
Calculator, pen, number 2 pencils, eraser, protractor, ruler, math compass, Colored pencils (optional), scantron(form no. - 882-E) for lecture exam.

Course Description: Study of concepts about the Earth and its history from ancient to modern times, and development of the geological time scale. Includes examination of how geologists interpret geological time and the coevolution of our planet and the life on it.

Core Learning Outcomes:

- Identify scientific questions pertaining to natural phenomena.
- Develop hypotheses, collect and analyze data using quantitative and qualitative measures.
- Effectively communicate the analysis and results using written, oral and visual communication.
- Collaborate in the evaluation of the quality of scientific evidence from multiple perspectives toward the goal of reaching a shared objective.

Course Learning Objectives: Upon successful completion of the course, students will be able to:

- identify common sedimentary rocks and structures, and interpret and describe the depositional environments in which they form
- describe the sedimentological, paleoclimatic, and orogenic history of the Earth with a focus on North America
- explain and apply the principles of stratigraphy, paleoecology, and geochronology
- explain the theory of biological evolution and how it explains the diversity and extinction of organisms
- identify common fossil organisms and describe their habitat
- construct and interpret geologic and stratigraphic maps and cross sections.

You should definitely read class conduct, evaluation criteria & grading scale and important notes. I am going to assume that you have read it and are willing to comply with all of it. Please feel free to ask me questions if you don't understand.

Evaluation criteria and grading scale

1. Weekly Quizzes	15%	
2. Homework assignments	10%	
3. Class Participation	05%	<u>GRADING SYSTEM</u>
4. Lecture Exam 1	15%	A= 90-100%
5. Lecture Exam 2	15%	B= 80-89%
6. Cumulative Final Exam	<u>40%</u>	C= 70-79%
	100%	D= 60-69%
		F= <60%

Final grade for the class will be based on the above-mentioned components. Here is a brief description on how each of these components will be administered.

- Weekly Quizzes:** You will have quizzes (~10 questions) every week at the beginning of class (8:30-8:50AM) except for the first day and days of exams (lab exam and lectures exams). Please be on time if you miss it you won't be allowed to take it after the end of class. If you arrive late (for example at 8:45AM) you will only have till 8:50AM to complete the quiz. Quizzes may comprise multiple-choice, fill in the blanks, true/false and short answer types questions.
- Homework:** I will assign you homework each week and you will have a week to complete and submit. Details of administering homework will be explained in class. I will use turnitin assignments for your homework. To submit assigned work, you will need to login into blackboard. You will see the turnitin assignment link. You can then submit your assignment using that link. I will create a separate link for separate homework. I will also do a test run to make sure you know how to do this.
- Class Participation:** I consider coming to class and completing assignments on time, participation in discussion of course materials and asking relevant course-related questions, your attitude/behavior towards me or your classmates as your class participation and attendance. I will have a sign-in-sheet to record your weekly attendance. I will hand you the sign-in-sheet at the end of the class (last 5-10 minutes) for you to sign. If you leave early you will be considered absent for that day.
- Lecture Exams (Exam 1, 2 and final exam):** Topics covered before exam 1 will be in exam 1 and topics covered after exam 1 will be in your exam 2. Cumulative exam will cover everything taught throughout semester. Questions will comprise multiple-choice, fill in the blanks, true/false and short-answer type questions. You will approximately 100 questions in each lecture exam.

CLASS CONDUCT AND IMPORTANT NOTES

- Cellphones and other electronics:** All cell phones are to be turned off at all times during the lecture period. Students who use cellphone during class may be asked to leave. Please be considerate of both of your fellow students and your instructor. No- you can't use cellphone as a calculator (please see required materials for this course). Ignoring this will result in loss of points out of your participation.
- Except for laptops (for taking notes), use of all electronic devices is strictly prohibited during the lecture. Use of any electronic devices except for calculator is prohibited during exams and quizzes.

3. Don't miss lecture and lab or any exam.
4. Read the lab manual and lecture prior to class.
5. You are encouraged to ask questions if you don't understand and come to my office during office hours. You can also make an appointment if my office hours are not good for you.
6. There will be no make-up exam and you MUST take all the exams.
7. Exams will not be rescheduled. Makeup exams are only given under exceptional circumstances and must be scheduled in advance.
8. No curves are applied to grades. Please don't ask for extra credit because your final grade will be based on 100% out of 110%.

Academic integrity and university policies

A. Class Attendance

“Your failure to attend class (face to face or hybrid), engage course material (Online only); or make contact with faculty to adequately explain your absence by the 10th class calendar day of the semester will result in your being administratively dropped from this course. Being dropped from this course may affect your enrollment status and/or your financial aid eligibility.”

B. Academic honesty code

The Academic Honesty Code is the University's standard of honesty. The code states, "Students must be honest in all academic activities and must not tolerate dishonesty." Students are responsible for maintaining the academic integrity of the University by following the Academic Honesty Policy. Students are responsible for doing their own work and avoiding all forms of academic dishonesty. Please make sure you are aware of the information available regarding academic honesty at <http://www.uhd.edu/about/hr/PS03A19.pdf>

C. Americans with Disabilities Act Compliance

“The University of Houston-Downtown complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students with a disability. In accordance with Section 504 and ADA guidelines, UHD strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a documented disability requiring academic adjustments/auxiliary aids, please contact the Office of Disability Services, One Main St., Suite 409-South, Houston, TX 77002. (Office) 713-226-5227 (Website) www.uhd.edu/disability/ (Email) disabilityservices@uhd.edu”

TENTATIVE COURSE OUTLINE

Any change in the schedule will be announced in class ahead of time. Lab assignment will be discussed in the class. Please bring your lab manual every class.

Date	Subject	Chapter(s)
Week 1	Introduction to historical geology. Earth as a system Recap of plate tectonics	1, 8
Week 2	Mountain building processes, Marine and non-marine environments	4, 5, 9
Week 3	Basics of stratigraphic principles and correlation. Dating of rock record	6
Week 4	Fossils and fossilization, origin of species, tree of life, biostratigraphy	3, 7
Week 5	<u>EXAM 1</u> The Hadean and Archean Eons, Rocks and atmosphere, earliest life forms	11
Week 6	The Proterozoic Eon, Rodinia and Pannotia, Rocks and atmosphere, glaciations (snowball earth and ediacaran period)	12
Week 7	Early Paleozoic era (Cambrian explosion), rocks and atmosphere, Cambrian-Ordovician tectonics and global fossil record,	13
Week 8	Middle Paleozoic Era (Siluro-Devonian geology, life, paleogeography)	14
Week 9	Late Paleozoic Era (Tectonics/sedimentation, life, paleogeography)	15
Week 10	<u>EXAM 2</u> Early Mesozoic Era (Tectonics/sedimentation, life, paleogeography)	16
Week 11	The Cretaceous world, KT boundary events	17
Week 12	Paleogene World and sedimentation	18
Week 13	Neogene World and sedimentation	19
Week 14	Holocene climate change	20

FINAL EXAM: December 9, 2014

Historical Geology (GEOL 1306/1106)

This course is required to students taking the BS in the Geosciences. It is also an option for students taking the BS in Biological and Physical sciences. The core requirements are met through a combination of activities from the required co-requisite lecture and lab so activities have been placed on the same worksheet. (This is the approach taken for co-requisite core courses General Biology and lab and General Chemistry and lab.)

Learning Outcome Students will be able to:	Instructional strategy or content used to achieve the outcome:	Method by which students' mastery of this outcome will be evaluated:
Utilize scientific processes to identify questions pertaining to natural phenomena.	<p>1. Knowledge and Comprehension of Geological Principles – Students will use scientific processes to examine sets of questions regarding geological phenomena including plate tectonics, geologic time scales and co-evolution of our planet and life on it.</p> <p>2. Hypothesis Testing – students will generate a hypothesis to test the validity of using carbon and oxygen isotope ratios to identify past climatic changes.</p>	<p>Students' ability to understand phenomena is addressed through exams which are based on short answer and essay questions (GEOL 1306 and 1106).</p> <p>The students will work in teams to collect data to correlate the relation of carbon and oxygen isotope ratios with past climatic changes, potential relation of plate tectonics and glaciation to isotope data. Teams will complete exercises showing their data, and present the data to the class. Rubrics will be used to evaluate the scientific quality of the data, quality of the presentation and teamwork (GEOL 1106).</p>
Utilize scientific processes to develop hypotheses, collect and analyze data using quantitative and qualitative measures.	Students, using information obtained from the modules rising seas and flooding, will make observations, collect data, calculate results, and generate graphs. They will subsequently use the data to interpret geological data from ancient Earth to identify similar events.	Lab reports and lab exercises will be evaluated. Students will also be given exams where they demonstrate comprehension of topics and analyze new data of ancient flooding, rising or regressive seas (GEOL 1106).
Utilize scientific processes to effectively communicate the analysis and results using written,	Students will present the data to the class from a specific geological time period, produce	The data will be presented to the class and they will include oral and visual components. The

<p>oral and visual communication.</p>	<p>graphs, and describe the evidence indicative of a repetitive cycle of flooding and/or rising seas.</p>	<p>presentation will be evaluated on scientific merit and communication using a rubric. Students will also turn in a written report for grading. Grades will be dependent on completeness, and written communication skills using a rubric (GEOL 1106).</p>
<p>Collaborate in the evaluation of the quality of scientific evidence from multiple perspectives toward the goal of reaching a shared objective.</p>	<p>Students will work in groups, evaluating data given by the instructor on specific topics in the geological history that may have affected major events in Earth's history. Topics can include the following topics: major bolide impacts, solar radiation, cosmic rays, etc.</p>	<p>All students will submit a written copy of their data evaluation before leaving the lab. If there is a problem with the data, students will be asked to re-analyze their data. Successful completion of the exercise and ability to work together as a team will be incorporated into the grade for the course (GEOL 1106).</p>