

# Geology 4304: Geochemistry

Fall 2017

**Instructor:** Dr. Pat Harris  
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**Office Hours:** Monday 1:00pm – 2:00pm, Tue 2:00pm – 3:00pm, by appointment, or anytime I'm around and my door is open.

## Course Information

**Location:** LDB 318

**Time:** MW 9:00 – 9:50 am  
M 2:00 – 3:50pm

### **Required Texts:**

1. Principles and Applications of Geochemistry. 2nd Ed., Gunter Faure, 1998. Prentice Hall/Pearson Publishing.
2. Supplemental Readings as Assigned.

## Course Description

This class is an introduction to Geochemistry. The class will examine how chemical principles can be applied to solve geological problems.

## Grading

Each lecture exam will be worth 100 points. Homework assignments will be given once every two to three weeks. Pop quizzes may be given over reading assignments and recent lecture material. The final exam will be comprehensive and worth 100 points. There will be no extra credit in the course.

The clay project: class is divided into groups and each group will be given an unknown clay sample to identify using XRD techniques, interpret the environment of formation, and write a short report of findings.

The water project will consist of collecting water samples, testing the samples using various analytical techniques, analyzing and interpreting the data, writing a report and presenting findings to the class at the end of the semester.

Semester exams (2 X 15%)	30 %
Final exam	20 %
Clay project	15 %
Water project	15 %
Homework and Quizzes	<u>20 %</u>
Total	100 %

## **Exam Policy and Important Class Dates**

Exams will be given during the class period on the dates listed below. Do not miss an exam! One comprehensive make-up exam will be given on the last day of class (Friday, December 1st at 9:00am) for documented emergencies only (e.g., severe illness, death in immediate family, etc.). If possible, you should notify me **before** missing an exam.

The make-up exam will be cumulative (i.e. it will cover everything covered on the two previous exams). There will be no make-up for the final (i.e. third) exam.

**Exam 1:** October 4th      **Exam 2:** November 8th

**Final Exam:** December 6<sup>th</sup> 9:30am - 11:30am

### **Grading Scale: percent (%)**

A = 90 - 100    B = 80 - 89    C = 70 - 79

D = 60 - 69    F = 59 - 0

## **Academic Honesty**

I expect you to fulfill your academic obligations through honest and independent effort. If I have sufficient reason to believe you are cheating on any graded work in this course, you will be dropped from the course with a failing grade. You may refer to the SHSU Academic Policy Manual, student section, Policy #810213 for specific language.

## **Students With Disabilities Policy:**

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should register with the Office of Services for Students with Disabilities located in the Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786, and e-mail [disability@shsu.edu](mailto:disability@shsu.edu)). They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Services for Students with Disabilities and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Services for Students with Disabilities. For a complete listing of the university policy, see:

<http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf>

## **Class Policies on Attendance/Behavior**

The university requires that I take attendance for the course. *Each absence in excess of **four** absences (for any reason) will decrease your final grade by 5 percentage points.* Three tardies count as one absence. Your attendance, motivation, and participation are integral to your success in this course. If you miss a lecture, it is your responsibility to obtain the material presented in the lecture from a fellow student.

If **you** decide to drop the course, it is **your** responsibility to fill out the necessary paperwork or you will receive a grade based upon your performance in the class regardless of the amount of work you completed.

## **Lecture Topics**

**\*\*\*Please Note\*\*\*** The topics of lecture are in relative chronological order but are subject to change. The dates of the exams are set and the material to be covered will be clarified based on lecture topics completed. I have listed more topics than we will probably be able to cover in the course.

<b>Lecture topic</b>	<b>Readings</b>
Distribution of Elements in Earth	Chapter 4
Continental Crust	
Igneous Rocks	
Sedimentary Rocks	
Oceans	
<b>Clay Minerals</b>	Chapter 13
Thermodynamics	Chapter 11
Acids and Bases	Chapter 9
Salts and their Ions	Chapter 10
Activity and Concentration	
Carbonate System	
Geochemistry of Natural Waters	Chapter 20
Mineral Stability Diagrams	Chapter 12
Oxidation-Reduction Reactions	Chapter 14
Chemical Weathering Case Studies	
<b>Water Presentations</b>	