

GEO3415: Paleontology of Invertebrates

“Nature is written in mathematical language.”
- Galileo

“I don’t like to say bad things about paleontologists, but they’re really not very good scientists. They’re more like stamp collectors.”
- Luis Alvarez

Spring 2018
T: 12:30-3:50
Th: 9:30-10:50
LDB 318

Instructor: Professor Andy Fraass

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Office: 313 LBD

(936) 294-1593 (office)

Office Hours: MF 10:00-11:00, Th 2:00-2:00 + by appointment

Textbook: *Bringing Fossils to Life: An Introduction to Paleobiology* third edition, Prothero

I. Rationale:

The fossil record is imperfect, though vital to our understanding of our place in history, and our basic understanding of biology.

II. Course Aims and Outcomes:

Aims

This course details the fossil record, how we read it, and how we can make robust, scientific conclusions from incomplete data.

Specific Learning Outcomes:

By the end of this course, we will have explored:

1. How diversity has changed through the fossil record, and potential biases
2. Aspects of evolution relevant to the fossil record (selection, evolutionary modes, macroevolutionary rates)
3. What the fossil record can tell us about the past and future Earth

4. Relevant statistical techniques

III. Format and Procedures:

This course is a mix of lecture and lab. I will not have a clean break in between the lab portion and the lecture portion. I will, however, let you know when exercises are for credit.

IV. Expectations:

Attendance:

You are all either geology majors or you're just interested in paleontology. That means if you're in this course, you are interested in this material. You're also adults. I'm not taking attendance for credit, but as-per SHSU guidelines I have to. Attendance is going to be recorded by answering in class quiz questions through Kaboodle (it's free). All students are expected to have some method of doing these online quizzes (phone or laptop). If that is not possible, please come and talk to me and we'll figure out a solution.

Email Policy:

I will respond to student emails within 2 business days. You can write casual emails, but they must be in complete sentences and words (If I see a 'u' instead of 'you' I'm not going to respond.) The subject line should include the course number (GEOL1404). If I have not responded in two days, go ahead and resend the email.

Phones and laptops:

I realize that everybody has lives, and sometimes you're are waiting for a very important phone call. Please, be respectful of your time, my time, and the attention of those around you. Leave the room. Don't mess around on your phone while you're in class. It's *really obvious* and it irritates your instructors. Irritated instructors assign more work. Yes, that is a threat. Even more, it distracts your classmates (there is lots of research on this). While I don't have a problem with individuals making bad choices for themselves, when it affects others it's a problem.

Similarly, laptops can be used for taking notes. Facebook and Twitter are not note-taking services. We're in a small room. I can tell.

V. Grading Breakdown (PROVISIONAL):

- Labs & In Class Activities (25%)
- Exams 1-3 (20% each)
- Organismal Group Presentation (15%)

If you would like to challenge a grade, please provide that challenge in writing with sufficient detail to explain the error, support your claim. I **will not** change anything on the spot.

Tentative Grading Scale

A = 90-100%

B = 80-89.99%

C = 70-79.99%

D = 60-69.99%

F = <59.99%

Testing

Testing will be done in a pyramid-style (cooperative) examination. Each examination will be divided into two stages. You will work alone during the first stage, complete, and hand in the examination. During the second stage, the same questions will be answered open book, open notes, and you will be allowed to work with your neighbors. Stage one will count for 75% of your grade, Stage two is 25%.

VI. Academic Integrity

“The University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action.”

— Sam Houston State University Academic Dishonesty Procedure

There **will** be consequences for cheating in accordance with the [Sam Houston State University Academic Dishonest Procedure](#). See Section 5.3 Academic Honesty.

Anything **I** consider cheating (copying work, etc.) will receive a penalty, with possibly a zero on the assignment.

VII. Accommodations for students with disabilities

If you require any kind of accommodations please come talk to or email me as soon as possible. You will also need to work with the [Services for Students with Disabilities](#) (SSD) Office (telephone 936-294-3512, TDD 936-294-3786).

VIII. Diversity and Discussion Statement

We are all individuals with our own experiences, backgrounds, and perspectives. We will do our best to be respectful of that diversity. Please let me know if there are additional efforts that can be taken to support learning about our shared Earth.

This is a course where we will discuss a variety of subjects, and not everyone in the room will agree. You **must** be respectful of disagreement, hear, and acknowledge other's experiences and perspectives.

That said, this is a course in science. You are entitled to your own opinions, you are not entitled to your own facts. I welcome a vigorous discussion. I welcome challenging accepted facts. Challenges, however, have to be backed up with data. This is *not* a class on rhetoric.

These challenges cannot be disruptive to the learning of others in the class. I reserve the right to stop a discussion if it is monopolizing class time and move it to my office hours (if no other students require office hours).

VIII. University Policies:

Students with Disabilities: 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). 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>

Religious Holy Days: If a student desires to be excused from class, assignment, or a test to participate in activities associated with a religious holy day, then the student must notify the instructor ahead of time of each scheduled class that he/she will miss for religious reasons. In such cases, the student will be required to take the test or submit the assignment early—unless there are good reasons for not being able to do so and the instructor has agreed to those reasons.

Visitors in the Classroom: Unannounced visitors to the classroom must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom. This policy is not intended to discourage occasional visiting of classes by responsible persons.

College can be tough. Stress-levels (self-reported) in College students is at the highest since 1966 (CIRP, 2010). My door is open. I am also a SHSU Haven Organization Diversity Advocate.

[SHSU offers counseling from 8-5 MThF, 8-7 TuW. \(369\) 294-1720 or stop by to make an appointment.](#)

X. Course Schedule: (*Subject to change*)

Week 1 Dude, we have to do math and
Jan 17-19 programming for paleo? Seriously?

Week 2 Nature of the Fossil Record Ch. 1
Jan 22-26

Week 3
Jan 29-Feb 2

Week 4 Population and Species Ch. 2
Feb 5-9

Week 5
Feb 12-16

Week 6 Growth and Form Ch. 3 **Exam 1**
Feb 19-23

Week 7 Evolutionary Morphology Ch. 4
Feb 26-Mar 2

Fieldtrip to Mineral Wells Fossil Park (Overnight)

Week 8 Systematics Ch. 7
Mar 5-9

Spring Break

Week 9 Paleoecology Ch. 8
Mar 19-23

Week 10 Evolutionary Rates & Trends Ch. 5
Mar 26-30

Week 11 **Exam 2**
Apr 2-6

Week 12 Global Diversification & Extinction Ch. 6
Apr 9-13

Week 13 Presentations & Paleobiogeography Ch. 9
Apr 16-20

Week 14 Presentations & Paleoclimatology
Apr 23-27

Week 15 Conservation Paleobiology
Apr 30-May 4

Final Exam

