

## Life Through Time: DNA to Dinosaurs (GEOL 121)

Welcome to “Prehistoric Life: DNA to Dinosaurs!” Have you ever watched the news and asked yourself why it matters if global temperatures are warming, or whether humans are responsible for the extinction of species around the globe? Have you ever wandered through a museum and wondered what life in Kansas would have been like 100 million year ago, or how dinosaurs could grow to be longer than 4 KU buses and weigh as much as 5 African elephants? Newly-transformed as part of the College of Liberal Arts and Science Course Redesign Initiative, “Prehistoric Life: DNA to Dinosaurs” will lead you on a journey through time to explore the eternal interconnections between life and the geology of Earth, including our own complex relationship with the world around us.

**Class Meetings:** Tuesday & Thursday, 1-2:15pm

**Instruction team:**

Alison Olcott Marshall, Assistant Professor  
Kelsey Bitting, Teaching Fellow and Visiting Assistant Professor  
Maritha Huber, Graduate Teaching Assistant  
Robert Rader, Graduate Teaching Assistant  
Tessa Newberry, Undergraduate Learning Assistant  
Wade Welton, Undergraduate Learning Assistant  
Leah Moelling, Graduate Research Consultant

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### Course Goals

In DNA to Dinosaurs, you will have the opportunity to practice and develop a number of skillsets and abilities. A few of these outcomes will be most important within the constraints of this classroom, but many will serve you well beyond this course and semester, in your life as an informed citizen and in tasks such as your future career. Ultimately, by practicing the skills and abilities we work on daily throughout the semester, our course goals are as follows:

1. Students will be able to analyze the extinction pressures acting on modern organisms into the context of those organisms' geologic, evolutionary, and climatic history.
2. Students will be able to construct an action plan for mitigating the current mass extinction event that is informed by their understanding of organisms' roles in and relationships with the Earth system.

You will have the opportunity to demonstrate to yourself and to us that you have achieved both of these goals during the final group project, due during the final exam period (more details to follow soon!).

### Class Expectations

The format for this course may be different from those you have encountered in other large classes, in that your role will be an active one- not a passive one, as in lecture-based courses. In-class time will involve work in assigned teams or pairs, activities that will ask you to think deeply and collect evidence to support a

conclusion, whole-class discussions of complex ideas, and clicker questions that will ask you to weigh in on difficult problems you may not yet be sure how to solve. Outside of class, you will need to set aside time to read, work on take-home exams, collaborate with your team on self-guided trips to the KU Natural History Museum, and complete Weekly Checkpoints online.

Students new to this active learning approach sometimes find it uncomfortable, especially after many years of taking lecture-based courses. However, this active format results in nearly an entire letter grade increase in average student exam scores! In fact, students in lecture-based courses are 1.5x more likely to fail than students in an active-format classroom. These benefits are a result of the many opportunities for you to practice solving problems on a regular basis with the help of the instructor, TA, and your teammates- instead of alone the night before the exam.

The instructors and TAs in the course are working hard to cultivate an environment that helps you learn and provides opportunities for you to practice skills that will help you throughout your life. Remember that even though there is no lecture, we are in the classroom to guide you when you get stuck on a problem, help you negotiate and understand new ideas, and even work with you to suggest outside resources, time management strategies, or ways of improving relationships with your team members.

While it may take you a few weeks or longer to get comfortable with the active format of this course, we expect that all students will bring a positive attitude to the classroom every day. Any student who is disruptive to their team or the class as a whole will be removed from the course at the instructor's discretion.

### **Required Materials**

1. Kolbert, Elizabeth. *The Sixth Extinction: An Unnatural History*. New York: Henry Holt and Company, LLC, 2014. Available from the KU Bookstores or on Amazon, Barnes and Noble, or other online booksellers (as a hardcover or as a Kindle book).
2. I-Clicker Remote (available at the KU Bookstore)

### **Grades**

Grades in this course will be based on a 1000-point scale, with points earned in the following ways:

- Activities and Homeworks- 250 points (10 randomly graded, 25 points each)
- Reading Circle Assignments- 250 points (10 randomly graded, 25 points each)
- Essays- 200 points (2 take-home essay assignments, 100 points each)
- PaleoCon Team Project- 150 points
- Weekly Checkpoints- 100 points (15 weekly checkpoints @ 5 points each; 1 syllabus quiz @ 5 points; pre and post exams @ 10 points each)
- I-Clicker Questions- 50 points

Final grades will be calculated as follows:

- A: >930 points
- A-: 900-929 points
- B+: 870-899 points
- B: 830-869 points
- B-: 800-829 points
- C+: 770-799 points
- C: 730-769 points
- C-: 700-729 points
- D: 600-699 points
- F: <600 points

Essays can be handed in up to three days late, but every day late is a 10% reduction in what your grade would have been. Other assignments will not be accepted late. A few extra credit opportunities will be announced as they arise during the semester.

We will not respond to emails about grades. If you would like to discuss grades, you must send an email to [geol121@ku.edu](mailto:geol121@ku.edu) detailing your question or concern, and provide your schedule for the coming week to set up a meeting with Dr. Olcott Marshall.

### **Team Policies**

This course will include abundant work in assigned teams. Research in university-level college science education demonstrates that groups that strive to work together will learn and accomplish far more than those that do not: Students with a more natural understanding or greater previous exposure to the relevant concepts benefit from the opportunity to teach others. Those who have difficulty benefit from discussing it with peers and having abundant opportunities to practice their skills and understanding and receive low-stakes feedback. Over the course of the semester you are likely to act as both a teacher and a student in your peer groups, and you will benefit from both roles.

We are well aware that many students have had frustrating or negative learning experiences related to group or team learning in the past. We invite you to use this course as an opportunity to hone your leadership and team facilitation skills, since teamwork is a necessary aspect of nearly every modern workplace. Employers actively seek out job candidates who are able to demonstrate experience navigating and facilitating a positive teamwork experience! In addition, literally hundreds of studies have shown that students who work collaboratively and make a sincere effort to communicate and support one another's learning achieve a myriad of academic benefits as well, including higher grades!

The following guidelines will help your group achieve a smooth working relationship:

- Always be respectful and open to working with everyone in your group. Everyone brings a different background, level of interest, and set of skills

- to the group and task at hand. For everyone to feel comfortable contributing, all group members must be encouraging and helpful.
- Be willing to contribute even (or especially) if you are not sure of the value of your contribution. Often one person has a question that is shared by others, but no one wants to be the one to ask.
  - Complete readings and assignments on time, and come prepared with questions and ready to explain what you have done and read to your group.
  - Do not be late to class or plan to leave early. Your full contribution and attention to the class activities is valuable to your own learning and your group's experience!
  - Set up a plan for contacting your group members and/or collaborating on outside work. We recommend exchanging phone numbers and emails, and utilizing free online tools such as Doodle Polls, Google Docs, GroupMe, or whatever technology works for everyone in the group.
  - Review returned assignments. Make sure everyone on the team understands the feedback and how to do the activity.
  - If a team member refuses to cooperate on an assignment, do not include that person's name on the assignment. If you do include a non-participatory member's name, this will be considered cheating in this course.

### **Getting and Giving Help**

Proactive help-seeking behavior is a strong determinant of success in college, and perhaps in life overall. Effective help-seekers ask specific questions, persist in seeking help until they understand the idea, and practice applying the help they receive. We have structured this course in a way that provides many different avenues for you to seek help:

1. Your peers in the classroom or on your team are probably the best possible source of help, because they may have recently shared some of the same difficulties and can explain how they worked through them. In fact, asking your peers for help benefits their learning even more than your own! (So be ready to try to help others whenever you get the opportunity!) Try to find effective help-givers, who will provide detailed explanations of the ideas, give you a chance to apply the information they relayed, and who monitor your understanding and provide feedback and additional help whenever necessary.
2. Check out the KU Libraries Guide for Geology 105 (a similar class in our department) at <http://guides.lib.ku.edu/c.php?g=95345&p=615737> This site includes guidance on how to find reliable sources of information about geology beyond our class book. Seek out websites or materials created by other universities, researchers, the United States Geologic Survey, or other professional organizations. In general, you will want to steer clear of personal websites or blogs created by people with unclear credentials, and fact-check news articles against more reliable scientific sources.
3. Talk with the LAs and TAs, either in the classroom or during office hours (to be announced soon!). They are working with us because they are passionate about geology and about helping you learn about our class

- materials! Whether you have concerns about your study habits, team conflicts, or class concepts, they are available to help.
4. Ultimately, sometimes it just helps to have a conversation with the instructor herself. To set up office hours with Dr. Olcott Marshall, write her an email documenting that you have already tried **at least 3** other approaches to finding help with your question. Include the times available in your schedule over the following week, and she will set up an individual conference to work with you one-on-one. We refer to this policy as "3-before-me."

### **Staying in Touch**

We will send announcements about the course via Blackboard. This means that they will be delivered to your KU email address. To stay up-to-date on this and other courses at KU, you must check your KU email address for notifications daily.

Email is the best way to contact us with questions about course content, the details of an assignment, or to set up a time to get help. Under normal circumstances, we will strive to respond within one *business* day. The class has a dedicated email address at [geol121@ku.edu](mailto:geol121@ku.edu).

Many students are in the habit of communicating electronically in a very informal way via text, chat, or brief emails. However, the relationship between the instructor or TA and the student is a professional one, and provides you the opportunity to practice electronic communication that would be appropriate to use in a job setting. Therefore, format *all* email correspondence with a salutation (Dear Professor/Dr. Olcott Marshall) and closing (Sincerely, Firstname Lastname) and clearly communicate your ideas without undue abbreviation or a lack of appreciation for grammar and punctuation. *We will not respond to emails that are not professional or respectful in tone.*

If you ask to meet with the instructor, you will need to provide documentation that you have passed the "3-before-me" guidelines (describe in the section above on Getting and Giving Help).

### **Plagiarism and Academic Misconduct**

While this course will include abundant work in teams, each student is still responsible for his or her own intellectual development. Plagiarism and cheating are serious academic offenses, and will be prosecuted in this course without hesitation.

Written materials such as essays are submitted via SafeAssign, which checks student work against published sources and other student work alike. For assignments that are submitted individually and not by your team as a whole, you may work together to develop your ideas and solidify your understanding if given permission by the instructor; however, your final written answer must be in your own unique words, organization, and construction to demonstrate your unique understanding of those ideas. Plagiarism is any case in which **your writing very closely resembles someone else's** in wording, sentence or

paragraph construction, or overall structure. Plagiarism is also **using ideas (even if they have been reworded!) that are not your own without giving credit** by using an in-text and full citation for online or other published materials. For team assignments, cheating includes **putting a name or signature down for a team member who is not present or participating**, copying answers from other teams, or any other manipulation of information to misrepresent the team's true intellectual development.

A single plagiarism or cheating offense will result in an **automatic 0** on that assignment; for team assignments, the entire team will receive a 0. Repeated offenses (either within one assignment or across multiple assignments) will result in an **automatic F** in the course for all involved parties and further academic sanctions.

### **Special Accommodation**

The KU office of Disability Resources coordinates accommodations and services for all students who are eligible. If you have a disability for which you wish to request accommodations and have not contacted DR, please do so as soon as possible. Their office is located in 22 Strong Hall; their phone number is 785-864-2620 (V/TTY). Information about their services can be found at <http://disability.ku.edu>. Please also contact Dr. Olcott Marshall privately in regard to your needs in this course.