Anthropology 394   Spring 2020
Earth and Planetary Sciences 394

Geological Context

This course is intended as an upper-level undergraduate offering in the theory and practice of geological context as applied to archaeological sites and paleontological localities. The aim of the course is to emphasize the incorporation of stratigraphic and spatial components into the body of theory on the interpretation of finds. Contextual information includes critical data relating to the processes of site formation and disturbance, and has important implications for the reconstruction of ancient human behavior, ecosystems and landscapes. The course will include weekly site-based discussions of theory along with practical sessions in data analysis and reporting. 3 Credits.

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         Office Hours: MTh 4:00 – 5:00 in 207 BioSci, or by arrangement.

Class Meetings: Tuesday & Thursday, 5:35 - 6:55 in BioSci 206, DC

Course Requirements: Students will be expected to attend class regularly, complete weekly readings, and to participate in discussions. Grades will be determined on the basis of weekly assignments (20%) (problem sets and quizzes), a term paper and presentation (40%), a midterm exam (20%) and a comprehensive final exam (20%).

Readings: Weekly readings will be available on the class Sakai site.

Texts: Kalb, Jon. 2001. Adventures in the Bone Trade. Copernicus.
        Lewin, Roger. 1997. Bones of Contention. University of Chicago Press.

Absences: Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website https://sims.rutgers.edu/ssra/ to indicate the date and reason for your absence. An email is automatically sent to me.
Please note: I expect you to complete all work for this course. Full credit may not be given for late quizzes or exams, but arrangements should be made to make up any work inadvertently missed over the semester.

Week	Date	Topic

1   21 Jan   Introduction: Significance of Context
      23 Jan   Practicum: Finds and Site Materials
                   Reading: Lewin Chapters 1 & 2; Serageldin 2011
                   Additional Reading: Feibel et al., 2009

2   28 Jan   Mauer and *Homo heidelbergensis*: A Pleistocene River
      30 Jan   Practicum: Maps and Spatial Analysis
                   Reading: Kalb Chapters 1-5
                   Additional Reading: Wagner et al. 2010

3   4 Feb   Cave Deposits: Guest Lecturer Professor Dan Cabanes
       6 Feb   Practicum: Out of Context
                   Reading: Kalb Chapters 5-10

4   11 Feb   Spatial Analysis: Guest Lecturer Chris Rowan
      13 Feb   Practicum: Exploring Google Earth
                   Reading: Lewin Chapters 7 & 8

5   18 Feb   Four Dimensions: Site Stratification and Time
      20 Feb   Practicum: Principles of Stratigraphy
                   Reading: Lewin Chapters 3 & 4; Feibel 2013

6   25 Feb   Tephrostratigraphy: Case Studies from the East African Rift
      27 Feb   Practicum: Tephra – Preparation, Analysis and Interpretation
                   Reading: Feibel 1999; Lewin Chapters 9 & 10

7   3 Feb   The Awash Valley: Science and Politics
       5 Mar   Practicum: Professional Conduct
                   Reading: Lewin Chapters 11 & 12;
                   Additional Reading: Feibel 2011

8   10 Mar   **Midterm Exam**
      12 Mar   Virtual Field Trip: Turkana Basin Expeditions

9   14/22 Mar   SPRING BREAK

10   24 Mar   Context in the Turkana Basin
      26 Mar   Practicum: Homs, Sites and Environments: Problems in Correlation
                   Reading: Kalb Chapters 6-10; Bell 1992

11   31 Mar   'Ubeidiya, GBY and Wet Sites
       2 Apr   Practicum: Fun With Fauna
                   Reading: Lewin Chapters 5 & 6; Kalb Chapters 11-15
                   Additional Reading: Feibel 2004

12	7 Apr	Kanapoi: A Problem in Complex Lithostratigraphy
	9 Apr	Practicum: Harris Matrix and Burials
		Reading: Kalb Chapters 16-20

13	14 Apr	Turkana II: Guest Lecturer Melissa Boyd
	16 Apr	Practicum: Facies Analysis from Sediment Suites
		Reading: Kalb Chapters 21-25

14	21 Apr	The Pompei Effect – Volcanism and Complex Sites
	23 April	Student Presentations
		Reading: Lewin Chapter 13, Afterword; Kalb Chapters 26 - end

15	28 Apr	Student Presentations
	30 Apr	Student Presentations
		Summary and Conclusions

17   Friday 8 May - 8:00 AM - Final Exam

Additional Readings

Bell, R. 1992. Impure Science. J. Wiley & Sons, New York. 301 pp. Ch. 1.

Feibel, C. S. 1999. Tephrostratigraphy and geological context in paleoanthropology. *Evolutionary Anthropology* 8: 87-100.

Feibel, C. S. 2004. Quaternary lake margins of the Levant Rift Valley. In: Speth, J. D. and Goren-Inbar, N. (eds.) *Paleoecology of the Levantine Corridor*. Oxbow Books, Oxford. pp. 21-36.

Feibel, C. S. 2011. A Geological History of the Turkana Basin. *Evolutionary Anthropology* 20(6): 206-216.

Feibel, C. S. 2013. Facies analysis and Plio-Pleistocene paleoecology. In: Sponheimer, M. Lee-Thorp, J. Reed, K. Ungar, P. (eds.) *Early Hominin Paleoecology*. University of Colorado Press. Boulder. pp. 35-58.

Feibel, C. S., Lepre, C. J. and Quinn, R. L. 2009. Stratigraphy, Correlation, and Age Estimates for Fossils from Area 123, Koobi Fora. *Journal of Human Evolution* 57: 112-122.

Serageldin, I. 2011. The values of Science. *Science* 332: 1127.

Wagner, G. et al. 2010. Radiometric dating of the type-site for *Homo heidelbergensis* at Mauer, Germany. *PNAS* 107: 19726–19730.

Learning Goals

1. Knowledge and major concepts: Students will learn about:
 the contribution of spatial, stratigraphic and temporal data for understanding the context of significant sites, localities, and the finds recovered from them.
 the analysis and interpretation of process and product in multi-proxy data.
 how the value of finds is linked to the quality of contextual data.
 how to use evidence to evaluate earth science concepts and draw conclusions.

2. Skills: Students will develop their abilities to ...
 read, visualize and interpret spatial, stratigraphic and temporal representations of scientific data.
 distinguish among evidence (data), models, assumptions, hypotheses, theories, interpretations, and predictions / recommendations.
 reason with and/or evaluate multiple working hypotheses.

3. Habits and attitudes: Students will
 employ appropriate learning skills for the sciences, including evaluation of data, reasoning and questioning.
 consider science as an ongoing endeavor that embraces curiosity, creativity and societal needs, and is not just a set of facts.
 recognize and experience two approaches used in the Earth system sciences, including:
  historical, descriptive, systems-oriented approaches;
  experimental approaches.
 ask "How do we know?", "Why do we accept it?", and "What is the evidence for ...?"

Cheating and Plagiarism
Short version: Don't cheat. Don't plagiarize.
Longer version: Cheating on tests or plagiarizing materials in your paper deprives you of the educational benefits of preparing these materials appropriately. It is personally dishonest to cheat on a test or to hand in a paper based on unacknowledged words or ideas that someone else originated. It is also unfair, since it gives you an undeserved advantage over fellow students who are graded on the basis of their own work. The university's policy on Academic Integrity is available at https://slwordpress.rutgers.edu/academicintegrity/wp-content/uploads/sites/41/2014/11/AI_Policy_2013.pdf
I strongly advise you to familiarize yourself with this document, both for this class and for your other classes and future work.