ANTHROPOLOGY 4183C
ARCHAEOLOGICAL SCIENCE

Instructor: Dr. Robert H. Tykot (Associate Professor)
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COURSE DESCRIPTION

This course focuses on the application of scientific methods of analysis to archaeological materials including bone, stone, pottery, and metal. Methods include absolute dating, remote sensing, optical and SEM microscopy, elemental and isotopic analysis. Laboratory sections provide hands-on experience with a variety of archaeological materials and analytical methods.

PREREQUISITES

By permit only. A working knowledge of archaeology and archaeological methods is expected (e.g. from ANT 3101); prior course work in geology or chemistry is useful but not required.

READINGS


A complete set of additional articles will be made available.

GRADES

Grades will be based on seven quizzes (50%), laboratory exercises (15%); a term paper (25%); a presentation of your term paper topic (5%); and class participation (5%). All students are expected to come to class prepared to discuss the assigned readings, and to participate in all laboratory sections. Course letter grades will be based on a curved standardized score with “A” awarded for 94-100; “A-” for 90-93; “B+” for 87-89; “B” for 84-86, “B-” for 80-83; “C+” for 77-79; “C” for 74-76; “C-” for 70-73; “D+” for 67-69, “D” for 64-66; and “D-” for 60-63.
OTHER POLICIES

This is a small upper-level anthropology course, and your regular attendance and participation is expected. There will also be material presented in class which is not in the readings but will be on the quizzes. Students who anticipate being absent from class due to observation of a major religious observance must provide advance written notice of the date(s) to the instructor. There will be NO make-up quizzes or excuses for late papers except in fully documented serious circumstances. A make-up quiz must be taken within one week of the missed quiz. Academic dishonesty, including plagiarism and cheating, will be punished according to University Guidelines, and may result in the receipt of an “F” on a paper (for plagiarism), an “F” in the course, suspension or expulsion from the University. Notes or tapes are permitted for purposes of sale only with the express written consent of the instructor.
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GRades

Grades will be based on quizzes (40%), laboratory exercises (10%); weekly presentations and discussion (15%), a term paper (30%); and a presentation of your term paper topic (5%). All students are expected to come to class prepared to discuss the assigned readings, and to participate in all laboratory sections. Course letter grades will be based on a curved standardized score with “A” awarded for 94-100; “A-” for 90-93; “B+” for 87-89; “B” for 84-86, “B-” for 80-83; “C+” for 77-79; “C” for 74-76; “C-” for 70-73; “D+” for 67-69, “D” for 64-66; and “D-” for 60-63.
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ARCHAEOLOGICAL SCIENCE LECTURE/LAB TOPICS
(schedule as of February 22, 2006)


Jan. 10  Introduction. Archaeological Science & Archaeometry
P&H chaps. 1, 10

Banning chaps. 1-6
USF facilities, safety procedures, project selection.

Jan. 17  How old is it? Dating methods in archaeology.
R&H chap. 7; Banning chaps. 13-15

Jan. 20  Lab: Radiocarbon dating and calibration.
Grad student presentations (dating)

Jan. 24  Quiz 1 (Dating Methods)
Soils
Guest Lecture & Lab Demo: Dr. Christian Wells (USF)
H&G chap. 3; Banning chap. 12; Wells 2004

Jan. 27  Making pottery (Guest Lecturer: John Wissinger, City of Tampa Ceramicist)

Jan. 31  Geoarchaeology in Yemen (Guest Lecture: Dr. Rick Oches, in NES 323)
H&G chap. 2
Lab: Amino Acid Geochronology (with Dr. Rick Oches, SCA 514)
P&H chap. 8
Feb. 3  
**Quiz 2 (Geomorphology, Soils)**

**Preparation of Beverages including Beer**

Guest Lecturer: Dr. Lisa Kahn (USF St. Petersburg)

Feb. 7  
**What plants did they eat?** Special topic: plant domestication.


**What was the environment?** Microbotanical remains: pollen and phytoliths.


Grad student presentations (paleoethnobotany)

Feb. 10  
**Lab: flotation & paleoethnobotanical analysis** (Jeff Du Vernay/Dan Tyler: SOC 047)

Banning chap. 11

**Lab: phytolith studies** (R. Bowers)

Feb. 14  
**Did they eat meat?** Topics: scavenging & hunting; domestication.

Banning chap. 10


Grad student presentations (zoarchaeology)

Feb. 17  
**Quiz 3 (Zooarchaeology, paleobotanical studies)**

Banning chap. 8

Lithics demonstration (Guest Lecture/presentation: Dr. Fred Sellet and Bill Boynton)

Feb. 19  
Optional Sunday meeting: Kiln preparation and pottery firing. 10-5 at John Wissinger’s house.

Feb. 21  
Grad student presentations (lithics)

**What is it made of?** Elements, compounds, minerals, alloys.

P&H chap. 2; H&G chaps. 10, 12

Feb. 24  
**What is it made of?** (continued)

H&G chap. 11; P&H appendices.

Grad student presentations (ancient technology)
Feb. 28  **How was it made?** Materials analysis in archaeology.
Banning chap. 9; H&G chap. 13
**Lab:** optical microscopy

Mar. 3  **Lab:** scanning electron microscopy (NAN, with Jay Bieber)
**Lab:** XRD

Mar. 7  **What does it look like?** Microscopy of archaeological materials.
**Grad student presentations (microscopy applications)**

Mar. 10  *no class*

Spring break

Mar. 21  **Quiz 4 (Material Science, Microscopy)**
Total Station/GPS - Lori Collins/Travis Doering

Mar. 24  **Remote Sensing** (Guest Lecture: Dr. Chuck Connor, SCA 534)
**Ground penetrating radar & proton magnetometry** (Dr. Sarah Kruse, SCA 522)
H&G chap. 8

Mar. 28  **Computers in Archaeology** (Guest Lecturer: Richard Estabrook, USF)
**Grad student presentations (computer applications)**

Mar. 31  **Quiz 5 (Remote sensing, electronic/computer based applications)**
**Where did it come from?** Provenance studies in archaeology.
R&H chap. 6
Apr. 4  **Provenance studies (continued)**  
Grad student presentations (provenance/trade studies)  

Apr. 7  **Quiz 6 (provenance studies)**  
**What did they eat and how much?** Paleodietary analysis and bone chemistry.  
**Lab: demonstration of sample preparation**  

Apr. 11  **Lab: stable isotope mass spectrometry** (Marine Science, St. Petersburg campus)  
**Lab: ICP spectroscopy**  

Apr. 14  *no class*  

Apr. 18  **Reconstructing life histories.** Applications and recent advances in bone chemistry.  
Grad student presentations (stable isotope analysis)  

Apr. 21  **Ancient DNA and organic residues.**  
Grad student presentations (DNA, residues)  

Apr. 25  **Quiz 7 (Isotopes, DNA, Residues)**  
Student Project Presentations  

Apr. 28  *no class - SAA*  

May 1  papers due