PLANTS, PEOPLE, AND CLIMATE IN ARCTIC PREHISTORY
SYLLABUS

ANTH 493, 693; BIOL 493, 693; GEOS 493, 693; NRM 493, 693

Time: 9:45-11:15 am Tues and Thurs.
Place: 203 Natural Sciences

INSTRUCTORS:
Dr. Nancy Bigelow
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474-5433
Office hours: 11:15-1:15 am on Tuesdays (Jan 25- Mar. 1), otherwise by appointment

Dr. Claire Alix
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Office hours: 11:15-1:15 am on Thursdays (starting Mar. 8), otherwise by appointment

COURSE GOALS:
This course introduces students to climate, vegetation, and human interactions in the Arctic and Subarctic, from the Lena River eastwards to Greenland. The first half of the semester (lead by Bigelow) will focus on climate and vegetation reconstructions, the second half of the semester (lead by Alix) will focus on human interactions with the environment and cultural responses (or not) to the climate and vegetation. In both sections, we will first present the research methods/concepts and then summarize the current research, beginning with the arrival of humans in the North (about 25,000 years ago) and conclude with the Norse disappearance from Greenland (around AD 1500). We will focus on key events and explore how the climate and vegetation may, or may not have influenced human behavior.

GRADING POLICIES:
• Undergrads will be graded against undergrads; grads will be graded against grads.
• Grading will be on a curve

LATE POLICIES:
• Papers will be accepted late ONLY if a prior (not the day before) arrangement has been made with one of the instructors.
• Tests must be taken on the date and time scheduled, UNLESS the student has an acceptable reason why he/she can not take the test at that time.
• ALL MATERIALS (tests completed, papers turned in) must be submitted to the instructors before 10 am, May 12, 2005. Otherwise, unless a prior arrangement has been made, the student will receive a failing grade.
READINGS AND LECTURES:
We hope to have all the readings on e-reserve (http://eres.uaf.edu/). The course is listed under ANTH 693 or Bigelow, only. The password is: ppc. That is, if you search NRM 693, or ANTH 493, it won’t come up. If you search under Bigelow, only ANTH 693 will come up. One hard copy of each of the readings will be placed on reserve at both Rasmuson and at Biosciences.

Several books will go on reserve at the GI-IARC library (open 8-5 M-F); these include Bradley; Ruddiman; Denton and Hughes; and Frenzel, et al.

All powerpoint lectures will be available to the students via blackboard (http://classes.uaf.edu/). The class is listed in all its guises and through both instructors. The password for the class (the same for all the CRN’s) is ppc.

STUDENT RESPONSIBILITIES:
Show up for class, participate in discussions, and complete required readings (10% of final grade)

One oral presentation (15% of final grade):
10-15 minutes with ca. 10 minutes of discussion afterwards. Students choose (or will be assigned) a topic that will be covered in that day’s lecture. The presentation is expected to be clear, synthesize the main points of the topic, and be critical. Providing a handout is optional, limited to two pages or less. The student should bring an overhead of the handout to class or provide a powerpoint file. Presentations are due either during weeks 3, 4, 5, and 6 or during weeks 10, 11, 12, 13, and 14. Presentation topics will be chosen (or assigned) at least two weeks before the presentation is due.

Two 45 min. tests (together, 25% of final grade):
The tests will cover the methods/concepts sections of the Bigelow and Alix parts of the course. The first test is on Feb 15 (for the Bigelow methods) and the second test is on April 7 (for the Alix methods). Both tests are short answer/essay, but the graduates will have more questions. The undergrads will have 5 short answer and one essay, the grads will have 5 short answer and two essays on each test.

Short paper (20% of final grade):
5-10 pages double-spaced, 12 pt font, one inch margin. Length does not include title page, figures, or references. The same length applies to both undergrads and grads, but the grads will be held to a higher grading standard. The paper topic is the student’s choice, but the topic needs to be okayed by either instructor. The short paper is due in class on Mar 10 (the Thurs. before spring break).

Longer paper (30% of final grade):
10-15 pages (undergrad) or 15-20 pages (grad) double-spaced, 12 pt font, one inch margin. Length does not include title page, figures, or references. The paper topic MUST integrate people/culture with the climate and vegetation history. Otherwise, the student may choose the topic, though it needs to be okayed by either instructor. The longer paper is due on May 10, by 5 pm.
WEEK 0 (JAN 20)
Bigelow Introduction to class, schedule, expectations, grading.

WEEK 1 (JAN 25, 27)
Jan 25: Bigelow Introduction to climate system

Jan 27: Bigelow Dating methods and orbital cycles
Required readings:
- Bradley, R. S. (1999). "Paleoclimatology: Reconstructing Climates of the Quaternary." Chap 3, pp. 47-72 (radiocarbon);
- Ruddiman, W. F. (2002). "Earth's Climate: Past and Future." W.H. Freeman, New York. Chap 8 pg 175-192 (only some of this chap is covered in this class, the remainder will be in the next class)
Recommended readings

WEEK 2 (FEB 1, 3)
Feb 1: Bigelow: Orbital cycles, oxygen isotopes
Required reading:

Feb 3: Bigelow: Ice cores and marine cores
Required reading:
Recommended reading:
- Bradley, R. S. (1999). "Paleoclimatology: Reconstructing Climates of the Quaternary." Academic Press, San Diego, sec. 5.4 (ice core paleoclimatic reconstructions) and sec. 6.4-6.8 (other proxies in marine records and corals).

WEEK 3 (FEB 8, 10)
Feb 8: Bigelow: Sea level change and overview of late Quaternary glaciations

Feb 10: Bigelow: Vegetation reconstruction methods and concepts, overview of late Quaternary vegetation history.

WEEK 4 (FEB 15, 17)
Feb 15: Test 1 (45 minutes)
Bigelow: Last interstadial (ca. 30,000-25,000 cal years ago)
Feb 17: Bigelow: Last glacial maximum to early post-glacial (ca. 21,000-14,000 cal years ago)


WEEK 5 (FEB 22, 24)
Feb 22: Bigelow: Late post-glacial to early Holocene (ca. 14,000-9,000 cal years ago)


Feb 24: Bigelow: Mid- to late Holocene (ca. 8000-2000 cal years ago)


WEEK 6 (MAR 1, 3)
Mar 1: Bigelow: Medieval Warm Period


Mar 3: Bigelow: Little Ice Age (ca. AD 1500-1850)


WEEK 7 (MAR 8, 10): PEOPLES OF THE NORTH

March 8: Alix: Human Adaptation to the North, hunter-gatherers and their environment.


March 10: Alix: Interpretation of the archaeological records


(SPRING BREAK)

WEEK 8 (MAR 22, 24): WOOD REMAINS AND THEIR ANALYSES

March 22: Alix Introduction to wood anatomy and structure. Methods of wood identification


March 24: Charcoal analysis: environmental reconstruction vs. fuel use.


WEEK 9 (MAR 29, 31): TREE-RING ANALYSIS, APPLICATION TO ARCTIC RESEARCH

March 29: Alix Introduction to tree-ring analysis. Application to archaeological contexts.


March 31: Alix: Wood in the Arctic. Sourcing wood in arctic archaeological/geological contexts
**Week 10 (April 5, 7): Wood Use and Technology - 2nd Test - Chronology**

**April 5: Alix**


**April 7: 2nd Test (45 minutes)**

*Alix:* Peopling of the Siberian Arctic: Chronology


**Week 11 (April 12, 14): Peopling of the "New World"**

**April 12: Alix**

*Early sites in Kamchatka: Ushki sites, and the Nenana complex in Alaska, ca. 15000 BP - 10000±90 BP.*


**April 14: Broken Mammoth**


**Week 12 (April 19, 21): Early Arctic Sites with Good Organic Preservation: The “Hidden Dimension” of Early Arctic Life**

**April 19: Alix**

*The Zhokhov site, occupation of the Siberian High Arctic in the Early Holocene. Ca. 8000BP*


**April 21: Alix**

*Qeqertasussuk an Early Paleo-eskimo site in western Greenland ca. 4000BP*


**Week 13 (April 26, 28): The First and Second Millenium AD.**

**April 26 Alix**

*The Thule Culture – Emergence and Migration*


**April 28: Norse Settlements in North America and Greenland**

*Required readings:* McGovern, T. H., Buckland et al. (1983) *Arctic Anthropology*, 20, 93-120.

**Week 14 (May 3, 5): Future Climate Change, Extreme Events, and Consequences**

**May 3 Alix and Bigelow**

*Climate prediction and Extreme events.*


**May 5: Bigelow and Alix**

*Impacts of Climate Change.*