ANTH 6430-001
ARCHAEOMETRY
SPRING 2015

Meeting Time: Tuesday, 4:30-7:00 pm
Old Main 245 (Anthropology Conference Room)

Instructor: Judson Finley
Office: Old Main 245f
Phone: (435)797-9621
Email: judson.finley@usu.edu

Office Hours: Tuesday and Thursday 1:00-2:30, or by appointment

Course Description

The purpose of this course is to provide an overview of applied natural sciences laboratory techniques to the analysis of archaeological materials. Prominent topics in archaeometry include dating methods, artifact source (i.e., provenance) analysis, microscopy, stable isotope geochemistry, and residue analysis. This class will focus specifically on dating methods and provenance analysis. Since this is a technical class, course time will be divided between regular lectures and topical readings. The course includes laboratory exercises that generally follow weekly topics.

Requirements

Grades for this class are based on four individual components: an annotated bibliography of the class readings (150 points), laboratory exercises (200 points), and a class project (100 points). Full participation in class discussions is expected, which means completing the weekly readings prior to class. To facilitate discussion, each student will generate an annotated bibliography of the class readings. I suggest using bibliography software such as EndNote. Annotated bibliographies for each week are due at the beginning of class. Each student is responsible for leading weekly discussions of related readings. Skills development is a major component of this course, and with a few exceptions weekly lab assignments will largely be completed outside of the classroom. The final class project is designed to introduce you to the USU Microscope Core Facility (MCF) and the new field-emission scanning electron microscope. Students will work collectively to analyze the trace element geochemistry and provenance of obsidian artifacts from a single Late Prehistoric period site in northwestern Wyoming.

Suggested Texts:


## Schedule:

<table>
<thead>
<tr>
<th>Week 1</th>
<th>January 7-9, 2015</th>
<th>Introduction—No Class</th>
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<tr>
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<td>NO LAB</td>
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<tr>
<td>Week 2</td>
<td>January 12-16, 2015</td>
<td>Introduction to Archaeometry, and a Crash Course in Chemistry</td>
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<tr>
<td></td>
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<td>READING: De Atley and Bishop (1991); Pollard et al. (2007)</td>
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<td>LAB #1: The Periodic Table of the Elements</td>
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<td>Week 3</td>
<td>January 19-23, 2015</td>
<td>Dating Techniques: Radiocarbon, Part 1</td>
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<td></td>
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<td>READING: Bronk Ramsey et al. (2006); Kennett et al. (2014); Reimer et al. (2013); Taylor (2009)</td>
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<td>LAB #2: Radiocarbon Dating: Calibration</td>
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<td></td>
<td></td>
<td>READING: Bamforth and Grund (2012); Contreras and Meadows (2014); Kelly et al. (2013); Williams (2012)</td>
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<td>LAB #3: Radiocarbon Dating: Graphical Representations</td>
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<td>Week 5</td>
<td>February 2-6, 2015</td>
<td>Dating Techniques: Radiocarbon, Part 3</td>
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<td>READING: Breitenbach et al. (2012); Bronk Ramsey (2008); Bronk Ramsey (2009)</td>
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<td>LAB #4: Radiocarbon Dating: Age Models</td>
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<td>Week 6</td>
<td>February 9-13, 2015</td>
<td>Dating Techniques: Dendrochronology</td>
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<td>READING: Dean (1997); Knight et al. (2010); Towner et al. (2009)</td>
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<td>LAB #5: Dendrochronology</td>
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<td>Week 7</td>
<td>February 16-20, 2015</td>
<td>NO CLASS TUESDAY February 17, 2015—MONDAY SCHEDULE</td>
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<td>NO LAB</td>
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<td></td>
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<td>READING: Aitken (1997); Feathers (2003); Feathers et al. (2006); Rittenour et al. (2014)</td>
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<td>LAB #6: Luminescence Sample Preparation</td>
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<td>Week 9</td>
<td>March 2-6, 2015</td>
<td>Dating Techniques: Luminescence, Part 2</td>
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<td></td>
<td>READING: Eerkens and Lipo (2011); Eerkens and Lipo (2014); Rhode (1994)</td>
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<td>LAB #7: Luminescence Sample Preparation</td>
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<td>Week 10</td>
<td>March 9-13, 2015</td>
<td>SPRING BREAK—NO CLASS</td>
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<td>NO LAB</td>
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<td>Week 11</td>
<td>March 16-20, 2015</td>
<td>Provenance Analysis: Obsidian</td>
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<td>READING: Shackley (1998); Davis et al. (1998); Glascock et al. (1998)</td>
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<td>LAB #8: Obsidian Source Analysis (FE-SEM)</td>
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READING: Frahm (2012); Hughes (1998); Eerkens and Rosenthal (2004); Eerkens et al. (2008)
LAB #9: Obsidian Source Analysis (FE-SEM) |
|---|---|---|
| Week 13 | March 30-April 3, 2015 | Provenance Analysis: Chert, Part 1
READING: Glascock and Neff (2003); Cackler et al. (1999); Huckell et al. (2011); Speer (2014)
LAB #10: Obsidian Source Analysis (FE-SEM) |
| Week 14 | April 6-10, 2015 | Provenance Analysis: Chert, Part 2
READING: Hubbard et al. (2004); Parish (2011); Parish et al. (2013)
CLASS LAB PROJECT |
| Week 15 | April 13-17, 2015 | Ceramic Analysis: Ceramics, Part 1
READING: Glascock et al. (2004); Neff (1998); Eerkens et al. (2002)
CLASS LAB PROJECT |
| Week 16 | April 20-24, 2015 | Ceramic Analysis: Ceramics, Part 2
READING: Finley et al. (2015); Ownby et al. 2014; Simms et al. (1997);
CLASS LAB PROJECT |

**Readings:** The readings for this course are available as electronic files on the course Canvas site.

**READING LIST**


IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA), qualified students with disabilities may be eligible for reasonable accommodations. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, 797-2444 voice, 797-0740 TTY, or toll free at 1-800-259-2966. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print or digital) are available with advance notice.

IN COMPLIANCE WITH THE FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA), it is the policy of the Department of Sociology, Social Work & Anthropology at Utah State University to maintain the confidentiality of students’ records. When it is not feasible to distribute exams, papers, and other assignments to students individually (e.g., in large-enrollment classes), the instructor may obtain from students a signed waiver of confidentiality regarding class assignments so exams, papers, and other academic exercises may be placed out during class or during other group sessions for students to pick up. A general waiver may be sought from each student at the beginning of the academic term with the understanding that the waiver may be rescinded, in writing, during the academic term if the student chooses. If a student does not sign a waiver, then assignments must be returned to that student confidentially.