

## Geoarchaeology (ANTH 3010)

Dr. M. Boyd (office: BB-2001-F); ph: 343-8010 ext. 8279;  
[matthew.boyd@lakeheadu.ca](mailto:matthew.boyd@lakeheadu.ca)  
 Office hours: by appointment (in person or Zoom)



### Course Description:

This course is designed to give students a thorough introduction to geoarchaeology as a contextual framework for human paleoecology. Major topics include description and interpretation of sediments in which archaeological remains are found, consideration of the natural processes that create the archaeological record, and reconstruction of landscapes on which ancient people lived. You will learn about climate change, and the effects of these changes on the Earth; the various types of landforms on which archaeological sites are found; and how the processes of erosion, deposition, soil formation, and biological and human activity affect archaeological deposits in fluvial, eolian, lacustrine, and other depositional environments. Other topics include: methods of dating archaeological sites; and geological sourcing of artifactual materials.

### Course Learning Outcomes

- Understand fundamentals of sedimentology and geomorphology of fluvial, lacustrine, eolian, glacial and other systems and their importance to archaeology.
- Obtain a solid understanding of radiometric dating, geological sourcing, and some theories and methods involved in paleoclimate reconstruction.
- Engage in experiential learning through outdoor geoarchaeological activities.
- Develop academic writing and research skills.

### Readings:

There is no required textbook for ANTH 3010, but I will post required weekly readings on D2L (myCourseLink). You will need to read/study these materials in order to do well in the course.

Boggs, S. 1995. Principles of Sedimentology and Stratigraphy. Prentice Hall.

Dincauze, D. 2000. Environmental Archaeology. Cambridge University Press.

Goldberg, P. and Macphail, R.I. Practical and Theoretical Geoarchaeology. Blackwell Publishing Ltd.

Reitz and Shackley. 2012. Environmental Archaeology. Springer.

### Evaluation:

Midterm exam: **20%**

Lab assignments (n = 7): **30%**

Final exam: **30%**

Research paper: **20%**

Research paper should be ~10 pages in length (typed, double-spaced, including references). The topic of your research paper may cover any aspect of Geoarchaeology, should be well-referenced, scholarly, critical, and based entirely on peer-reviewed sources (journal articles and/or academic books). Please follow a standard style guide for the social sciences such as APA when formatting your paper.

**Letter grades and their numerical equivalents:**

<b>A+</b>	90-100%	<b>B</b>	70-79%	<b>D</b>	50-59%	<b>F</b>	0-39%
<b>A</b>	80-89%	<b>C</b>	60-69%	<b>E</b>	40-49%		

Students are responsible for ensuring that they are properly registered in this class.

See the LU Calendar for information on academic integrity, examinations, grade appeals, and other important regulations of which you should be aware.

\*\*\* Late assignments will be deducted 10% per day from the final grade for that assignment.

**Other information**

STUDENT ACCESSIBILITY SERVICES Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit <https://www.lakeheadu.ca/faculty-and-staff/departments/services/sas>.

There are two outdoor “labs” in this course. These little excursions will take place on the LU campus. Please wear boots or old shoes with good ankle support; long pants (no shorts); rain gear (depending on weather). There is also a moderate amount of walking over uneven ground during these outdoor sessions. Please let me know if you are unable to participate in these activities for reasons of a disability and therefore require accommodations.

**Lecture and Lab Schedule:**

<b>Module</b>		<b>Readings</b>	<b>Lab</b>
<b>1</b>	Introduction; Sediment classification; Weathering;	Reitz & Shackley (2012), ch. 5	No lab
<b>2</b>	Sediment transportation; Physical properties of sediments; Sedimentary structure; Chemical/ biochemical deposition;	Reitz & Shackley (2012), ch. 5  Boggs ch. 4 & 5	Identifying sediment transport from particle shape <b>Lab #1</b>
<b>3</b>	Organic matter; Soils and buried soils; Slope deposits	Reitz & Shackley (2012), ch. 5	Soils lab <b>Lab #2</b>
<b>4 + 5</b>	Rivers and lakes	Goldberg & Macphail (2006), ch. 5	<b>Outdoor lab #3</b>
<b>6</b>	Eolian environments; Coastal settings	Goldberg & Macphail (2006), ch. 6 & 7	<b>Outdoor lab #4</b>
<b>Oct. 10-14</b>	<b>Fall Study Break</b>		No lab/class
<b>Oct. 20</b>	<b>Midterm Exam (2h)</b>		Lab period
<b>7</b>	Caves and rockshelters; Postdepositional processes & the formation of the archaeological record;	Goldberg & Macphail (2006), ch. 8  Reitz & Shackley ch. 2	No lab
<b>8 +9</b>	Mechanisms underlying climate change; Human responses; Sedimentary records of climate change;	Dincauze (2000)	No lab
<b>10</b>	Plant microfossil analysis Other paleoenvironmental techniques	Dincauze (2000)	Microfossil lab <b>Lab #5</b>
<b>11</b>	Geological sourcing: select methods		Mineralogy lab <b>Lab #6</b>
<b>12</b>	Radiocarbon and other dating techniques		Radiocarbon lab <b>Lab #7 (take home)</b>
	<b>Final exam: TBA (scheduled by University)</b>		