Geoarchaeology (ANTH 3010)

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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 theories/methods involved in paleoclimate reconstruction.
- Develop skills that can be directly applied to archaeological research.
- Engage in experiential learning through outdoor geoarchaeological activities.
- Foster critical thinking skills in geoarchaeology.

Readings:

There is no required textbook but I will post required weekly readings on D2L (myCourselink). You will need to read/study these materials to do well. These readings come from the following sources:

- Boggs, S., Principles of Sedimentology and Stratigraphy. Prentice Hall.
- Dincauze, D., Environmental Archaeology. Cambridge University Press.
- Goldberg, P. and Macphail, R.I. Practical and Theoretical Geoarchaeology. Blackwell Publishing Ltd.
- Reitz and Shackley, Environmental Archaeology. Springer.

Evaluation:

Midterm exam: **30%**
Lab assignments (n = 7): **30%**
Final exam: **40%**

Letter grades and their numerical equivalents:

A+	90-100%	**B**	70-79%	**D**	50-59%	**F**	0-39%
A	80-89%	**C**	60-69%	**E**	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

- You are responsible for properly registering or withdrawing from this course. Make sure to check the LU website for the withdrawal deadline.

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

- Late term papers and other assignments will be deducted **10%** per day from the final grade for that assignment. 'Makeup' tests/exams are only allowed to the extent permitted under Lakehead University regulations, and supporting documentation may be required.

- **A breach of Academic Integrity is a serious offence**. The principle of Academic Integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should view the Student Code of Conduct – Academic Integrity – for a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

- **Artificial intelligence policy**: I see generative AI tools as both useful and problematic in the context of academic work. As a result, there are some ways in which AI may be used by students in this course, and other uses that are prohibited.

    - Allowable uses of AI: brainstorming topics for the term paper; and as a 'study buddy' when preparing for the tests in this course. Note: the information used to train AI models may be flawed, incomplete, or biased.

    - Prohibited uses of AI: you are not allowed to use genAI tools such as ChatGPT, Bard, etc. to generate content for exams, written assignments, or labs. All work submitted for evaluation must be the student's original work. The submission of any work containing AI generated content will be considered a violation of academic integrity ("Use of Unauthorized Materials"). You are also not allowed to use AI tools to perform basic research activities such as finding sources, summarizing information contained within academic sources, critiquing sources, generating research ideas and interpretations, and similar activities.

- As a university student, you may sometimes experience mental health concerns or stressful events that interfere with your academic performance and negatively impact your daily activities. All of us can benefit from support during times of struggle. If you or anyone you know experiences academic stress, difficult life events or feelings of anxiety or depression, Lakehead has resources available to you. Check in with the WellU Key to find the mental health resources you are looking for. Remember that getting help is a smart and courageous thing to do- for yourself, for those you care about, and for those who care about you. Getting support sooner rather than later is almost always helpful.

- 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 Support for Students with Disabilities | Lakehead University.

- 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 require accommodations to fully participate in these outdoor activities or require alternative assignments.

Lecture and Lab Schedule:

Module		Readings	Lab
1	Introduction; Sediment classification; Weathering;	Reitz & Shackley (2012), ch. 5	No lab
2	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 **Lab #1**
3	Organic matter; Soils and buried soils; Slope deposits	Reitz & Shackley (2012), ch. 5	Soils lab **Lab #2**
4 + 5	Rivers and lakes	Goldberg & Macphail (2006), ch. 5	**Outdoor lab #3**
6	Eolian environments; Coastal settings	Goldberg & Macphail (2006), ch. 6 & 7	**Outdoor lab #4**
Oct. 13-17	**Fall Study Break**		No lab/class
Oct. 20	**Midterm Exam (2h)**		Exam
7	Caves and rockshelters; Postdepositional processes & the formation of the archaeological record;	Goldberg & Macphail (2006), ch. 8 Reitz & Shackley ch. 2	No lab
8 +9	Mechanisms underlying climate change; Human responses; Sedimentary records of climate change;	Dincauze (2000)	No lab
10	Plant microfossil analysis Other paleoenvironmental techniques	Dincauze (2000)	Microfossil lab **Lab #5**
11	Geological sourcing: select methods		Mineralogy lab **Lab #6**
12	Radiocarbon and other dating techniques		Radiocarbon lab **Lab #7 (take home)**
	Final exam: TBA (scheduled by University)		