<p style="text-align:center">Anth 3811 WA (2022) **Spatial & Digital Archaeology**</p>

Class: BB2002   Instructor: Scott Hamilton
Time: Tue, Thur, 8:30 to 10:00 am   BB:2001E
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A review of emerging methods for digital characterization of archaeological sites, landscapes and objects. Rapid methodological transformation in archaeology is associated with the development and widespread application of computing technology after the 1980s. Beginning with the development of consumer desktop computing, the rapid development of digital technologies has sparked transformation in how data is collected, processed, stored, analyzed and consumed. These trends are accelerating within archaeological practise, forcing sharp reorientation in the training and professional practise into the future.

The original intent for this class was to be face-to-face with lab demonstration sessions. Given the situations of the Covid pandemic, this is currently uncertain, with at least the first two weeks of the term being delivered remotely. This uncertainty forces a degree of flexibility into the curriculum, and how it will be delivered. I ask for your patience as we see how January unfolds.

Grading
Encyclopedia Entries (3 x 10%)
Midterm test   (1 x 15%)
Lab assignment   (1 x 20%)
Final paper   (1 x 20%)
'Elevator pitch'   (1 x 5%)
Participation   (1 x 10%)

You will produce three **'encyclopedia' (3 x 10%)** writing assignments (ca 350-400 words each) valued at 10% each and submitted to me by email as attachments in WORD or PAGES format. These assignments will be edited and returned to aid in improving your writing style. They can address a technology, a method, or an archaeological case study featuring a method. 'Encyclopedia entries' must be well-written, accessible to a non-technical reader (no jargon), and offer clarity of interpretation. Usually a few (2-3) key references are included. An example will be offered in class to illustrate my expectations. You will be evaluated on the quality of your prose, and your ability to effectively summarize complex issues.

The **midterm test (15%)** will be a mix of definitions/short answer questions related to the course topics addressed in the first half of the course. You might also be asked to offer a small essay selected from a list of topics.

In the final third of the term a lab demonstration module offers practical exposure to 3D scanning, modelling and printing methods. This will involve class demonstrations of the process, with a **lab assignment (20%)** requiring you to apply these skills. This will be designed to be done using regular computers using freely downloadable software.

The '**Elevator Pitch'** (5%) is a brief opportunity (5-10 minutes) to simply and succinctly present your idea for a term paper to the class. The intent is to get feedback from the group about your idea and how to refine it. Your grade will reflect how well you verbally presented your idea so that your audience understood what you are going to talk about.

The **Final Paper (20%)** (15 to 20-page) will provide an academic review of a methodology or set of related methodologies relevant to spatial or digital archaeology. This might involve a summary and overview of the science and technology underlying the method(s), or a summary of archaeological case studies that utilize such methods. Students should 'pitch' the topic idea to the class.

While structured as a lecture/lab demo class, students will be expected to participate through in-class discussion, questions and debate. Much of the material discussed reflects methods that are not commonly part of archaeological training at the undergraduate level. To maximize the learning experience, students are strongly encouraged to seek clarification in class as needed.

Lakehead's Accommodation & Confidentiality Statements:
Lakehead University is committed to achieving full accessibility for persons with disabilities/medical conditions. Part of this commitment includes arranging academic accommodations for students with disabilities/medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability/medical condition 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 email sas@lakeheadu.ca or visit
https://www.lakeheadu.ca/faculty-and-staff/departments/services/sas

Students are strongly advised to familiarize themselves with the Student Code of Conduct (http://policies.lakeheadu.ca/policy.php?pid=60) with regard to both academic and non-academic misconduct. Non-compliance will NOT be tolerated in this course and the code will be adhered to in terms of disciplinary action.

Wk 1   Jan 11, 13
        Introduction
        Module 1 Conventional visualization in archaeology
        Module 2 Interrogating your data using visuals
        Module 3 Archaeological interpretation is a 3D problem
        Module 4 Reading and interpreting published maps
                        NTS maps, global cartesian grid systems
                        Issues of scale, resolution, precision and accuracy
                        Map projections

Wk 2   Jan 18, 20
        Module 1 Mapping archaeological sites
             Cartesian Grid space
             Map construction
        Module 2 Traditional mapping tools

Collecting accurate analogue information
Total Stations
LiDAR scanning and emerging technologies
Theodolite Demonstration

Wk 3   Jan 25, 27
Module 1 Post-1980s Transformation: shift from analogue to digital technology
          Desktop and laptop computing, digital photography
Module 2. Global Positioning Systems
          Issues of data precision and accuracy
          Coordinate 'capture' that exceeds map accuracy.
GPS demonstration
Encyclopedia #1 due (10%)

Wk 4   Feb 1, 3
Module 1 Geographic Information Systems as Relational Databases
Module 2 transforming information into GIS data structures
Module 3 Nature of GIS data
Module 4 Interrogating GIS data to answer questions

Wk 5   Feb 8, 10 Remote sensing and non-invasive Archaeology
          Near-Surface Geophysical Remote Sensing
Encyclopedia #2 due (10%)

Wk 6   Feb Feb 15, 17 Remote sensing and non-invasive Archaeology cont'd
Mod 1 Aerial remote sensing, Visible light, thermal, multispectral and LiDAR sensors
Module 2 Digital photogrammetry
Module 3 Improved georeferencing using RTK, PPK GPS systems

Wk 7   Feb 21 to 25 Study Break

Wk 8   Mar 1, 3
Midterm Test (15%) (March 1)
Module 1. UAV flight simulation

Wk 9   Mar 8, 10
Data processing and integration cont'd
Multi-iterative paleo-landscape and cultural landscape modelling
'Idea pitch' regarding your final term paper (5%)
Encyclopedia #3 due (10%)

Wk 10 Mar 15, 17
3D scanning, modelling and printing

Wk 11 Mar 22, 24
3D scanning, modelling and printing cont'd

Wk 12 Mar 29, 31
3D scanning, modelling and printing cont'd
Lab Assignment Due (20%)

Wk 13 Apr 5, 7
Review and Overview
Term Paper Due (20%)