

ANTH 485

Seminar in Method and Theory: Virtual Biological Anthropology

INSTRUCTOR: Dr. L. Elizabeth Doyle

COURSE DESCRIPTION

Like many sciences, the discipline of biological anthropology is moving increasingly toward the use of remote, non- and minimally-invasive data collection methods and study materials curated in virtual form, including imaging data (computed tomography, x-rays, Magnetic Resonance Imaging, and 3D laser scans); chromatography; isotope analysis; genetic, genomic, metabolomic, microbiomic datasets; and machine-learning-assisted approaches to analysis.

This course is designed for students who are interested in skeletal biology and the diverse fields of anthropological research that depend on the study of human skeletal and dental remains. Those who plan to pursue a career in biological anthropology or a research-related field will especially benefit from this course.

The course will follow a **virtual laboratory** format to explore theory and methods underpinning the study of ancient human population demography, social structures, biological relationships, and health and disease across the life course. In the process, students will develop their knowledge of research design and methods in biological anthropology, along with the ability to critically assess the strengths and weaknesses of methods and the research underpinning them. **Synchronous attendance will be expected regularly**, although some class time will be devoted to asynchronous activities. **All software tools used in this course will be free or optional.**

This course will offer opportunities for you to hone a number of key professional skill sets, such as: analysing research methods; written and oral communication, literature research, project management, and teamwork. In particular, you will demonstrate your learning through a topical research project with multiple practical components, including: drafting a proposal; writing an in-depth literature review; and presenting findings in an oral-visual format. Feedback will be offered at key points in the project trajectory.

COURSE OBJECTIVES

By the end of the course students will be able to:

- Describe and apply methods used in major areas of inquiry in biological anthropology using free software tools.
- Demonstrate the ability to use a variety of virtual methods to build a biological profile, and explain why and when each method may be appropriate for use;
- Identify, orient, and side human skeletal elements in whole and fragmentary form, based on both 3D scans and 2D images;
- Take field-based photographs appropriate for expert identification in cases where potential human remains are found;
- Critically analyse published research papers with particular attention to:
 - Research design and how it can influence the quality and applicability of osteological methods and datasets;
 - Sample size and composition, and how it relates to the quality of evidence and conclusions;
 - Ethical, theoretical, and methodological challenges posed by bioanthropological research.