Anthropology 3014 FA
Quantitative Anthropology
FALL 2024

Class Times: Monday & Wednesday, 8:30 – 10:00 am
Location: BB 2002

Instructor Information: Dr. Jessica Metcalfe
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Office Location: BB 2001 D

Office Hours: Monday & Wednesday 10:00 – 11:00 am, or by appointment

Note: The will not necessarily respond to emails on evenings and weekends.

Course Description/Overview: This course is a hands-on introduction to applying quantitative methods in anthropological research. Students will gain practical experience designing, conducting, interpreting, and presenting research that uses quantitative data. Skills developed through this course are not only vital for a career in research but are also critical for many non-academic careers.

Prerequisites: Third year standing or higher, or permission of the Chair of the Department of Anthropology.

Course Learning Objectives:
The overall goal of this course is to provide students with experience conducting quantitative anthropological research, from start (development of a research question and methods) to finish (dissemination of results). By the end of this course, students will be able to:

- Formulate quantitative anthropological research questions and approaches to answering the questions
- Summarize and examine data using statistical methods and data visualization
- Interpret and critique quantitative analyses
- Communicate research purpose, methods, results, and interpretations in oral and written formats
- Work collaboratively and provide constructive feedback to peers

Class Format: This is an **in-person** course that utilizes active learning strategies, so it is important to attend class at the appointed times. Participation marks will accrue for regular attendance and active participation. If you are unable to attend the in-person class and you have a reasonable excuse, please let your instructor know—ahead of time, if possible.

Course Website: Access through Lakehead University website 'Quicklinks' (top right corner), 'For Students > **myCourseLink**. The website includes:

- Content folder with PowerPoint slides, recorded lectures, journal article readings
- Discussion boards for general questions and assignments
- Assignment instructions and submission folders

Readings will be posted on the course website (no purchases are required), and are drawn from the following sources:

- **Bernard**, H.R. (2006). *Research Methods in Anthropology*, Sixth Edition, AltaMira Press, Oxford. (selected excerpts)
- **Lane**, D., Scott, D., Hebl, M., Guerra, R., Osherson, D., Zimmer, H. (n.d.) *Introduction to Statistics: Online Edition*. (Public domain document)
- **Metcalfe**, J.Z. (2021). Isotopic evidence for long-distance connections of the AD thirteenth century Promontory caves occupants. *American Antiquity* 86(3): 526-548.
- **Perez,** C.C. (2019). *Invisible Women: Data Bias in a World Designed for Men*. Abrams Press, New York.
- **Smith,** R.J. (2018). The continuing misuse of null hypothesis significance testing in biological anthropology, *American Journal of Physical Anthropology* 166, 236-245.
- **Williams**, L., **Quave**, K., 2019. *Quantitative Anthropology: A Workbook.* Academic Press.

Required Materials:

Laptop Computer

Please bring a laptop to every class. We will often be working through examples in Excel and PAST. If you do not have a laptop, please talk to me ASAP. Laptops are available for borrowing at the university library.

Microsoft Excel:

Microsoft Office 365 software (including Excel) is free for LU students – please download and install it if you do not already have it.

PAST 4.03 Statistical Software (PALeontological STastics):

Download and install this free software package for Windows or Mac OS.
PAST instructions and manual will be available on the course website.

Note: in past years, Mac users have reported some 'bugs' with this program, for which they were able to find workarounds. It is your responsibility to install the program and attempt to troubleshoot any issues ASAP. Contact the instructor if troubleshooting fails and you continue to experience problems.

Evaluation

Most of your grade will be based on a series of small assignments and quizzes that will help you build your knowledge over the course of the term. They have been designed with the goal of promoting meaningful, practical, and long-lasting learning of skills that will be beneficial in academic or workplace settings.

Note: there is no midterm or final exam for this course.

Item	Value (%)	Due Date(s)
Participation	10	Ongoing
Quiz 1	4	Friday Nov. 15
Quiz 2	4	Friday Nov. 22
Research Project Stages		
(1) Site visit	6	Friday Sept. 13 (midnight)
(2) Safety and ethics	6	Friday Sept. 20 (midnight)
(3) Research proposal	10	Friday Sept. 27 (midnight)
(4) Sampling & data collection plan	10	Monday Oct. 7 (midnight)
(5) Data acquisition	10	Monday Oct. 21 (in class)
(6) Preliminary data analysis	10	Wednesday Nov. 6 (in class)
(7) Conference-style research presentation	15	Wed. Nov. 27
(8) Final research report	15	Friday Dec. 13* (midnight)
TOTAL	**100**	

*A 2-day grace period for the final research report is available with no questions asked (i.e., extension to Sunday Dec. 15 at midnight), but you must let me know if you want to take advantage of this grace period before the Dec. 13 deadline. Besides that, the regular lateness policy for assignments will apply (see below).

Participation grades will be based on attendance, preparedness, and contributions to discussions. Effective participation in class includes careful listening, asking questions, making comments based on your prior knowledge and the required readings, providing respectful critiques and creative suggestions, and engaging with course content to the best of your ability. Note: If you fail to attend class, you will not only lose marks on your participation grade, but you will also be at a disadvantage in completing the assignments, since we will be discussing them in class.

Assignment instructions will be posted on the course website. All of the assignments are stages in your own unique **research project**. You will engage in all aspects of the research process, including creating a research question, ethical guidelines, and sampling methodologies, and collecting, analyzing, and interpreting data. Like a professional researcher, you will discuss preliminary results with colleagues (classmates/instructor), give a conference-style presentation, receive feedback, and write a final research report. Guidelines and options for the research project will be provided early in the course.

Quizzes in the latter half of the term are designed to help you review statistical concepts and methods, which will help you with your research project and in future research endeavours.

Format: The quizzes may include true/false, multiple choice, and/or short written answers. Some portions will be problem-based. The quizzes will be administered through the course website and will be taken outside of class time.
Attempts: You may make up to 2 attempts at the quiz, and only the highest grade will be counted. The quiz must be completed individually. Study aids are allowed but use of AI is not.
Availability: Each quiz will be made available 48 hours in advance of the deadline (on D2L). You can complete the quiz at any time during the 48-hour period.

Lateness Policies

- **Quizzes** must be completed within the time periods allotted (see above for details), or the student will receive a grade of zero unless they have a documented/valid excuse.
- **Assignments or papers** that are submitted late will receive deductions of 5% per calendar day late (including weekends and holidays). Assignments or papers more than one week (7 days) late will not be accepted and will receive a grade of zero unless excused in advance by the instructor.
- **Presentations** must take place in class on the scheduled date, unless discussed in advance with the instructor or with documentation of an emergency. If you miss your presentation date without a valid excuse, you will receive a zero for that assignment.

Important Dates:

First day of classes: Sept. 3
Final date to register: Sept. 16
Study Break (no classes): Oct. 14 - 18
Final date to withdraw: Nov. 8
Last day of classes: Tues Dec. 3 (make up day for Mon Sept 30 holiday)
Exam period: Dec. 6 – 16
Instructor must submit grades by Dec 20

Course Schedule (subject to modification)

Readings are listed for each date in parentheses. Some classes will include a discussion of readings (see schedule below). Please be sure to read those before the class for which they are assigned.

1. Introduction & Background

Wed. Sept. 4: Course overview. Why are quantitative methods important?
Readings: Course outline

Mon. Sept. 9: What is quantitative research? What are statistics?
Readings: Lane et al. (n.d.), pp. 11-14, 223-224

2. Research Design

Wed. Sept. 11: Objectivity and bias
Reading: Perez (2019), pp. 1 – 25.
In-class discussion of reading
Research Project Stage 1: Site visit (6%) is due on Friday September 13
In this assignment you will identify the location(s) where you intend to collect data for your research project and begin to formulate research questions and approaches. See detailed instructions for further information.

Mon. Sept. 16: Ethics and safety
Readings: Ethical statements (online)
In-class discussion of research ethics & preparation for 'safety and ethics' assignment

Wed. Sept. 18: Research Design
Readings: Williams & Quave (2019), pp. 1-4
Research Project Stage 2: Safety and Ethics (6%) is due on Friday Sept. 20
In this assignment you will formulate safety and ethical guidelines for your research. See detailed instructions for further information.

Mon. Sept. 23: Research Questions and Methodologies: An Example
Reading: Metcalfe et al. (2021), whole article

Wed. Sept. 25: Defining and Operationalizing Variables
In-class lab activity: Bison skull measurements I
Readings: Bernard (2006), ch. 2 pp. 28-52; Lane et al. (n.d.), pp. 34-39
Research Project Stage 3: Research Proposal (10%) is due on Friday September 27
In this assignment you will your write a brief research proposal that includes some background research on your topic, a working title, a clear research question (or questions) and a preliminary plan/approach. See detailed instructions for further information.

Mon. Sept. 30: National Day for Truth and Reconciliation. No classes!

Wed. Oct. 2: Sampling
Reading: Lane et al. (n.d.), pp. 20-25

Mon. Oct. 7: **Validity & Uncertainty**
In-class lab activity: Bison skull measurements II
Readings: Lane et al. (n.d.), pp. 231-234; Bernard (2006), ch. 2 pp. 53-68
Research Project Stage 4: 'Sampling & Data Collection Plan' (10%) is due today (Monday Oct. 7)
In this assignment you will create a sampling plan, data collection sheet, and Excel template that will eventually house the data you collect. See detailed instructions for further information.

3. Descriptive Statistics

Wed. Oct. 9: Visualizing data: Databases, tables, and figures
Readings: Lane et al. (n.d.), pp. 65-115

Fall Study Break Oct. 14 - 18: No classes!

Mon. Oct. 21: **Category data**
Readings: Lane et al. (n.d.), pp. 40-42 and see previous class readings
Research Project Stage 5: 'Data Acquisition (10%) is due at the start of class.
In this assignment, you will actually collect your data and input it into your database. You will then reflect on the data acquisition experience in an in-class discussion. Note: if you are not in class today you may receive a zero on the discussion portion of this assignment. See detailed instructions for further information.

Wed. Oct. 23: Interval and ratio data I: Distributions
Readings: Lane et al. (n.d.), pp. 42-51, 123-135

Mon. Oct. 28: Interval and ratio data II: Dispersion
Readings: Lane et al. (n.d.), pp. 144-153

Wed. Oct. 30: Interval and ratio data III: Normal distributions & EDA (Exploratory Data Analysis)
Readings: Lane et al. (n.d.), pp. 248-258

Mon. Nov. 4: Correlation and regression
Readings: Lane et al. (n.d.), pp. 164-175, 180

Wed. Nov. 6: Research Project Stage 6: Preliminary Data Analysis (10%)
In this assignment, you will summarize and analyze your results using tables and figures, which will be shared with the instructor and your peers. We will discuss

each student's results in class and you will receive feedback that will help you improve your data visualization and interpretations. Note: if you are not in class today you may receive a zero on the discussion portion of this assignment. See detailed instructions for further information.

4. Inferential Statistics

Mon. Nov. 11: Intro to Inferential statistics: Chi-Square Tests

Readings: Lane et al. (n.d.), pp. 185-197, 369-376, 601-607 (exclude mathematical derivations)

Wed. Nov. 13: Null hypothesis significance testing & alternatives

Readings: Smith (2018) - whole article

Quiz 1 (4%) due Friday Nov. 15 at midnight

Mon. Nov. 18: Normality tests & T-tests

Readings: Lane et al. (n.d.), pp. 248-258 388 and ch. 12 for reference

Wed. Nov. 20: 2 and >2 comparisons of univariate data

Readings: Lane et al. (n.d.), pp. 516-517

Quiz 2 (4%) due Friday Nov. 22

5. Presentations and Course Wrap-Up

Mon. Nov. 25: Research presentation preparation

Readings: None

Wed. Nov. 27

Research Project Stage 7: Conference-Style Research Presentation (15%)

This presentation should be conference-style (i.e., 10-15 min), with a clear introduction, presentation of results, interpretations, and conclusions. In addition to summary statistics, you should use inferential approaches to address your research question. You will receive peer and instructor feedback after your presentation, which you should use to help you prepare your final research report.

Mon. Dec. 2: Course Review & Wrap-Up

Tues. Dec. 3: Research Paper Workshop (final class—note that it is on a Tuesday!)

Friday Dec. 13 (during exam period):

Research Project Stage 8: Final Research Report (15%)

Although the due date is Dec. 13, there is a 2-day grace period (no questions asked) to Sunday Dec. 15 at midnight. You must let the instructor know if you want to take advantage of this grace period before the Dec. 13 deadline. Further extensions will only be considered in exceptional circumstances. Please contact

the instructor as far in advance as possible if you anticipate problems with these deadlines.

General Information

Regulations – from the Lakehead University Academic Calendar
"It is the responsibility of each student registered at Lakehead University to be familiar with, and comply with all the terms, requirements, regulations, policies and conditions in the Lakehead University Academic Calendar. This includes, but is not limited to, Academic Program Requirements, Academic Schedule of Dates, University and Faculty/School Policies and Regulations and the Fees and Refund Policies and Schedules."

Academic Integrity
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 are strongly advised to familiarize themselves with the Student Code of Conduct - Academic Integrity ("The Code") - and, in particular, **sections 26 and 83 through 85**. Non-compliance with the Code will NOT be tolerated in this course and the Code will be adhered to in terms of disciplinary action. The Code provides a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

Use of AI
Generative artificial intelligence (Generative AI or GenAI) is a category of AI systems capable of generating text, images, or other media in response to prompts. These systems include ChatGPT and its variant Bing (built by OpenAI) and Bard (built by Google) among several others. Other Generative AI models include artificial intelligence art systems such as Stable Diffusion, Midjourney, and DALL-E. **Any use of GenAI systems on assignments or quizzes in this course is not permitted unless otherwise indicated by the instructor.** All work submitted for evaluation in this course 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").

Copyright
Students should be aware that all instructional, reference, and administrative materials prepared for this course are protected in their entirety by copyright. Students are expected to comply with this copyright by only accessing and using the course materials for personal educational use related to the course, and that the materials cannot be shared in any way, without the written authorization of the course instructor. If this copyright is infringed in anyway, students may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to

act ethically and with integrity in academic matters and to demonstrate behaviours that support the University's academic values.

Support for Students – there are many resources available to support our students. These include but are not limited to:

- Student Success Centre
- Student Accessibility Services
- Library
- Academic Support Zone (Writing and Math Tutoring Centre)
- Lakehead International
- Indigenous Initiatives
- Health and Wellness

Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or 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 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 contact Student Accessibility Services, SC0003, 343-8047, sas@lakeheadu.ca

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, Student Health and Wellness is here to help. Their services are free for Lakehead Students and appointments are available. You can learn more about confidential mental health services available on and off campus at lakeheadu.ca/shw. 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. Asking for support sooner rather than later is almost always helpful.