ENST 5050 – QUANTITATIVE RESEARCH METHODS

ARCH 5113 – METHOD AND THEORY IN ARCHAEOLOGY

Fall 2019

Instructor: Dr. Adam Cornwell **Office:** RC 2006D

E-mail: acornwel@lakeheadu.ca

Text: Roberts, Kampen and Peter (2010), *The Statistics Coach: Learning Through Practice*, Oxford University Press.
An additional text on the practice of statistics should also be in your possession.

Course Objectives

The central goal of this course is to explore and analyze quantitative research methodologies in the context of environmental studies. The intentions are to assist students in identifying obstacles and limitations that frequently arise when conducting quantitative research, and to encourage them to interact with other graduate and faculty researchers who may have expertise that can prove valuable to their career. Students will develop renewed confidence in their ability to incorporate these concepts into their theses.

A secondary goal is assisting in the production of the thesis research plan. The Fall semester is not too soon to begin a review of the literature and consider appropriate questions and methodologies.

Course Description

Meetings in this course will generally consist of instruction and slideshows, although interaction is encouraged. The material will be put into practice through the completion of assignments and the context of developing thesis research plans. *It is expected that students will be in regular contact with their thesis advisors in developing their plan*. Included in the regular course meetings will be lab sessions for exploring software such as SPSS, Excel, ArcGIS, and RStudio.

Evaluation Scheme	Weight	Due Dates
Assignment 1	5%	September 24
Assignment 2	5%	October 8
Assignment 3	5%	October 22
Assignment 4	5%	November 5
Assignment 5	10%	November 19
Assignment 6 (GIS)	10%	November 26
Research Methods Proposal	20%	December 3
Participation	10%	
Examination	30%	TBA

Resources

Lecture slideshows, assignment information, and solution sets will all be posted to Courselink (Desire2Learn). Software is available in the computer labs on the third floor of ATAC, and free licenses can be acquired for personal computers. The HelpDesk has schedules of lab availability.

Please come and see me if you need help.

Room and Time

Tuesdays, 2:30-5:30, in RC 2005 unless otherwise indicated.

Syllabus (*subject to change with notice*)

Date	Topic(s)
September 3	Introduction and discussion of thesis topics and objectives.
September 10	Review of Descriptive Statistics.
September 17	[ATAC 3009] Introduction to SPSS.
September 24	Probability, Distributions, and Sampling.
October 1	Bivariate Analysis: Crosstabulation and Correlation.
October 8	Study Week. **No session this week.**
October 15	Regression and Experimental Design.
October 22	Inferential Statistics: Samples to Populations.
October 29	Hypothesis Testing and Parametric Distributions
November 5	ANOVA and Non-Parametric Tests
November 12	[ATAC 3009] Geographical Information Systems.
November 19	[ATAC 3009] Introduction to R
November 26	[ATAC 3009] Tests and Plots using R

Sessions marked [3009] will take place in ATAC 3009.

Research Methods Proposal

Not all thesis projects in the MES program will require quantitative research methods. Nevertheless, nearly all projects involve components that could be analyzed quantitatively, and so taking serious consideration of the application of these techniques should be valuable to all students.

At the end of the course, students will complete a proposal for the use of quantitative research methods directed at their selected research topic or area of interest. This does not need to be a fully formed thesis proposal, but should include the following components:

- Background information about the problem to be studied
- Research questions that are clear and measurable
- Proposed quantitative research methodology, including descriptions of:
    - Data collection instruments and how they should be used.
    - The sample to be studied, including variables and levels of measurement.
    - The plan for analysis, emphasizing **validity** and **reliability**. Likely this will include the use of **descriptive** and **inferential** techniques and including the possibility of **control** variables, with a discussion of the appropriateness of each technique to the expected size, type, and distribution of the sample data.
    - The application of the results to the research questions, and an exploration of how the results will guide subsequent steps in your research.