ANT 600: QUANTITATIVE METHODS IN ANTHROPOLOGY
FALL 2018 (CLASS 10367)
MONDAY & WEDNESDAY 2:45-4:05, AS 104

Instructor: Adam Gordon, Ph.D.
Office: AS 246
email: agordon@albany.edu
Office hours: Monday, 9:30 to 11:30 am, or by appointment.

Prerequisites: This class requires graduate standing in anthropology or permission of the instructor.

Course Objectives: This course is designed to provide an introduction to probability, statistics, and hypothesis testing as applied to data sets typically found in anthropological research. By the end of the course, students should be familiar with these concepts and be able to implement various statistical tests using the statistical programming language *R*.

Course Website:
Course materials such as readings, data sets for homework exercises, grades, and this syllabus will be posted on Blackboard. In addition, course announcements such as amendments to this syllabus will be posted on Blackboard.

Required Textbooks:

Dalgaard P. 2008. *Introductory Statistics with* R*, second edition*. Springer.
Motulsky H. 2014. *Intuitive Biostatistics, third edition*. Oxford University Press.

The textbooks may be supplemented with other required readings that will be made available via Blackboard.

Statistical Software:
We will be using the statistical programming language *R* in this course. Prior to the second class meeting, all students must download and install *R* from the *CRAN* website (http://cran.r-project.org/) onto a computer that they will have regular access to. In addition, Windows users should download and install a text editor for *R* code that color-codes functions and highlights matching brackets (such a text editor is built-in for Mac users). I use the freely-available program Notepad++ (https://notepad-plus-plus.org/), but there are many programs available. *R Studio* (www.rstudio.com/) is also a popular option that combines text editing and a GUI for *R*.

Students With Disabilities:
Students with disabilities who need special accommodations should notify me and have appropriate documentation on file with the Disability Resource Center (http://www.albany.edu/disability/index.shtml). I will be happy to accommodate your needs with sufficient advance notice. Let me know if you anticipate needing any type of special accommodation in this course or have questions about physical access. For more information about "reasonable accommodation", please see the Disability Resource Center's Reasonable Accommodation Policy: www.albany.edu/disability/docs/RAP.pdf

Academic Integrity:
Academic dishonesty of any kind will not be tolerated in this course. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Students who are found to be academically dishonest will receive academic sanctions as outlined in the university's Graduate Regulations and Degree Requirements: http://www.albany.edu/graduatebulletin/requirements_degree.htm#penalties

Grading: Final grades will be given as A-E.

Course Requirements

Attendance: This is a graduate course; as such, I expect everyone to show up for every meeting. Furthermore, the material in each class builds on the material presented in earlier classes, even more so than is the case in many other courses, so it is imperative that you attend every class. Please let me know if something comes up that prevents you from attending class. Poor attendance suggests that you are not committed to doing well in the course. I will allow excused absences in the case of religious holidays, documented illness, professional conferences, and possibly other activities, but please let me know about these absences with as much advance notice as possible. I will also allow one unexcused absence without penalty; however, it is common courtesy to let me know in advance if you know you are going to miss a class, or to let me know afterwards why you missed a class. I understand that people have family emergencies, have car trouble, etc. – just please let me know why you missed class. If you have more than one unexcused absence then I reserve the right to deduct 5% from your final grade for each additional absence.

Homework Exercises: In order to ensure that you understand the material covered in class and do not fall behind, there will be regular homework exercises throughout the semester. Unless otherwise stated, the assignments will be due the next class period after they are handed out. You will lose 20% of the total possible grade on any exercise for every day that a homework assignment is late (i.e., after five days you will receive no credit for an assignment).

Exams: There will be two exams in the second half of the semester. Students may be expected to work through simple calculations by hand on some questions, and will be expected to be able to explain various concepts in detail, describe how particular analyses work, how to interpret results of various analyses, and how to choose and set up an appropriate analysis for a given situation.

Components of Overall Course Grade:

Exams:	30%	Homework exercises:	70%

Course Schedule

(Note that this schedule may be adjusted later in the semester.)

Week 1

M 8/27 Introduction to Statistics
Reading: Motulsky, Ch. 1-3 (pages 3-25)

W 8/29 Introduction to R
Reading: Dalgaard, Ch. 1-2 (pages 1-53)

Week 2

M 9/3 NO CLASS (Labor Day)

W 9/5 Probability and Confidence Intervals
Readings: Motulsky, Ch. 4-6 (pages 29-58); Dalgaard, Ch. 3 (pages 55-65)

Week 3

M 9/10 NO CLASS (Rosh Hashanah)

W 9/12 Probability and Confidence Intervals

Week 4

M 9/17 Descriptive Statistics and Graphics
Reading: Dalgaard, Chapter 4 (pages 67-94)

W 9/19 NO CLASS (Yom Kippur)

Week 5

M 9/24 Central Tendency and Dispersion
Reading: Motulsky, Ch. 7-9 (pages 59-84)

W 9/26 Understanding Probability in Society
Readings: http://www.npr.org/series/333708682/risk-and-reason

Week 6

M 10/1 Binomial and Gaussian (Normal) Distributions
Reading: Motulsky, Ch. 10-11 (pages 85-94)

W 10/3 Binomial and Gaussian (Normal) Distributions

Week 7

M 10/8 The Central Limit Theorem, Sample Statistics, and Confidence Intervals
Reading: Motulsky, Ch. 12-14 (pages 95-119)

W 10/10 The Central Limit Theorem, Sample Statistics, and Confidence Intervals

Week 8

M 10/15 Hypothesis Testing, *P* Values, and Statistical Significance
Reading: Motulsky, Ch. 15-18 (pages 123-162); Nuzzo et al. (2014) [on Blackboard]

W 10/17 Hypothesis Testing, *P* Values, and Statistical Significance

Week 9

M 10/22 Hypothesis Testing, *P* Values, and Statistical Significance
Reading: Motulsky, Ch. 19-21 (pages 163-180)

W 10/24 Challenges in Statistics
Reading: Motulsky, Ch. 22-26 (pages 183-229)

Week 10

M 10/29 Challenges in Statistics

W 10/31 **EXAM**

Week 11

M 11/5 Tests of Proportions (Chi-Square, Fisher's Exact)
Readings: Motulsky, Ch. 27 (pages 233-241); Dalgaard, Ch. 8 (pages 145-154)

W 11/7 Tests of Proportions (Chi-Square, Fisher's Exact)

Week 12

M 11/12 One- and Two-Sample Tests
Readings: Motulsky, Ch. 30-31 (pages 261-283); Dalgaard, Ch. 5 (pages 95-107)

W 11/14 One- and Two-Sample Tests

Week 13

M 11/19 Correlation
Readings: Motulsky, Ch. 32 (pages 284-293); Dalgaard, Ch. 6.4 (pages 120-124)

W 11/21 NO CLASS (Thanksgiving)

Week 14

M 11/26 Linear Regression
Readings: Motulsky, Ch. 33-35 (pages 297-328); Dalgaard, Ch. 6.1-6.3 (pages 109-120)

W 11/28 Linear Regression

Week 15

M 12/3 **EXAM**

W 12/5 ANOVA and Non-Parametric Tests
Readings: Motulsky, Ch. 39-41 (pages 369-400); Dalgaard, Ch. 7 (pages 128-143)

Week 16

M 12/10 Summary