Introduction to Quantitative Analysis for Geographers
GEO 3162C/GEO 6160, Sections IQDL, IQUF
Location and Time: Online
Term: Fall 2021

Instructor: Akhil R Kshirsagar (PhD Student, MBBS, MPH&TM)
Contact: Canvas Message/akhil.kshirsagar@ufl.edu
Office Hours: TBA

Course Description

The course covers topics including data measurement, descriptive statistics, probability distributions, samples and populations, sampling, hypothesis testing, and inference. It is designed to ensure students gain a fundamental understanding of basic statistical procedures and the scientific methods. It lays the foundations for intermediate and advanced topics such as multivariate methods, spatial statistics, and econometrics. Students will learn how to apply statistical concepts and techniques, use an analytical software (JMP) as well as gain a critical perspective on the data used in statistical analyses.

Course Objectives

1) Provide students with a working knowledge of various statistical techniques used in geographic research and practice
2) Understand the reason why we use statistics and how they are important to use informed decisions
3) Become familiar with the different types of data you will encounter, and why it is important to understand which statistical tests to use
4) Build awareness on the limitations of statistical analysis
5) Be able to critically assess data that are used in statistical analyses and understand the concept of "garbage-in-garbage-out" as it relates to statistical analyses
6) Use statistical software to apply statistical concepts and methods learned in class

__Required Textbook__ (Mandatory to Purchase, will also be available in digital format via Course Reserves)

Reid, H.M. (2014). Introduction to Statistics: Fundamental Concepts and Procedures of Data Analysis. Sage Publications. ISBN – 9781452271965
**Remember that it is recommended that you use Mozilla Firefox to access the *Course Reserves* tab in Canvas.

__Course Schedule__

Week 1: COURSE INTRODUCTION AND SYLLABUS

Week 2: WHAT IS STATISTICS, WHY DO WE USE IT/STATISTICAL THINKING

Week 3: PROCESS OF STATISTICS, SAMPLING DESIGN, AND PROBABILITY INTRODUCTION

Week 4: DATA TYPES, DATA VISUALIZATION, AND MEASURES OF CENTRAL TENDENCY

Week 5: NORMAL DISTRIBUTION AND Z-SCORES

Week 6: INTRODUCTION TO INFERENTIAL STATISTICS AND CHI-SQUARE

Week 7: CHI-SQUARE (CONTINUED)

Week 8: OUTSTANDING SUBMISSIONS

Week 9: THE ONE-SAMPLE Z-TEST AND ONE-SAMPLE T-TEST

Week 10: THE INDEPENDENT SAMPLES T-TEST AND THE DEPENDENT SAMPLES T-TEST

Week 11: INTRODUCTION TO THE F-DISTRIBUTION AND ANOVA (ANALYSIS OF VARIANCE; ONE-WAY BETWEEN SUBJECTS)

Week 12: THE ONE-WAY WITHIN SUBJECTS ANOVA

Week 13: THE TWO-WAY BETWEEN SUBJECTS ANOVA

Week 14: THE PHI CORRELATION, THE PEARSON R CORRELATION, THE POINT BISERIAL CORRELATION, AND INTRODUCTION TO REGRESSION

Week 15: SIMPLE LINEAR REGRESSION AND MULTIPLE LINEAR REGRESSION

Week 16: CLASSES END

Evaluation of Grades

Assignment	Total Points	Percent of Grade
Quizzes (6)	120	17%
Homework (6)	280	40%
Final Exam	300	43%
Total	700	100%

Grading

Points	Percent	Grade	GPA
651 - 700	93.0-100.0	A	4.00
630 - 650	90.0 - 92.9	A-	3.67
609 - 629	87.0 - 89.9	B+	3.33
581 - 608	83.0 - 86.9	B	3.00
560 - 580	80.0 - 82.9	B-	2.67
539 - 559	77.0 - 79.9	C+	2.33
511 - 538	73.0 - 76.9	C	2.00
490 - 510	70.0 - 72.9	C-	1.67
469 - 489	67.0 - 69.9	D+	1.33
441 - 468	63.0 - 66.9	D	1.00
420 - 440	60.0 - 62.9	D-	0.67
0 - 419	00.0 - 59.9	F	0.00

More information on grades and grading policies is here:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Quizzes (17%)
Students' understanding of course material will be assessed periodically through multiple-choice timed quizzes. Each quiz will be for 20 minutes and is worth 20 points. There are 6 total quizzes.

<u>Homework (40%)</u>

Homework assignments will take the form of reflecting on important conceptual and practical issues within statistics through reflection papers, as well as analyzing and interpreting datasets with statistical software. Homework assignments are each worth 40/50 points and there are 6 homework assignments.

Homework Assignments 3-6 will require use of the JMP software, which needs to be downloaded at **https://software.ufl.edu/software-listings/sas-jmp.html** .

**It is highly recommended that you download and install this software well in advance of when HW #3 becomes available, to avoid any unnecessary delays or issues with installation or assignment submission.

<u>Final Exam (43%)</u>

There will be one exam worth 300 points in this class. The Final exam will cover all the course materials and will be worth 43% of your final grade. The exam will be administered via Honorlock. Please use the Honorlock tab in Canvas for the most up to date information regarding this service, especially if you have not used it before. Students are responsible in educating themselves about the use of Honorlock, if they have not used it prior to this. The Final exam will be a mix of **Multiple Choice, True/False and Matching** questions. You will be allowed a maximum of 5-pages (of 2 sides each) as rough work for several of the questions, which will require you to solve by hand to reach the answers that will be provided in the form of multiple-choice, T/F or matching. In addition, you will also be allowed to carry 1-page (standard-size 8.5 x 11 paper, either typed or handwritten) with written formulae only.

<u>Class Attendance</u>

Students are required to watch all lectures and read all course materials. As this is an online course, attendance won't be a factor in grading, and students are expected to be self-motivated and have completed all required assignments.

<u>Class Demeanor</u>

Students are expected to watch all lectures and read all required material. Students must behave in a professional manner that is also respectful to the instructor and to fellow students. Opinions held by other students should be

respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

Late Work and Make-Up Policy

10% of the assignment grade will be deducted from an assignment for every day the assignment is late, unless prior arrangements are made with the instructor due to an unforeseen circumstance or life event that will not allow the student to turn in the assignment on time.

Prior arrangements must be made sufficiently in advance through email/Canvas messaging to the instructor (not the night before an assignment is due), and the instructor must approve the extension. The 10% deduction will be applied at midnight for each 24-hour increment after the time the assignment is due.

The final exam must be turned in on time. There will be no late final exams accepted, due to the timeline for grading and final grade submission to the University.

Here is an example of the late policy applied to a 50-point homework assignment. If the assignment is due at 11:59 am on Monday, 10% of the homework assignment grade will be automatically deducted by Canvas as soon as the time is midnight (12 am) on Tuesday. Therefore, the maximum credit the student can receive for the assignment is 45 points, representing a loss of half a percent of the student's final grade. If the student fails to submit the assignment within the subsequent 24-hour period, the maximum amount the student can receive for the assignment will be 40 points. This process continues until reaching 0, after which the student cannot earn credit for the assignment.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are requested to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "***We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code***."
On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "***On my honor, I have neither given nor received unauthorized aid in doing this assignment***."
The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conducthonor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc/Default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.