

GEOG 2710: Introduction to Statistics in Geography
Spring 2023-2024, 3 credits, Course #7229
MWF 11:50 am -12:45 pm
Tupper Hall 104

James Dyer
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Office Hours: M&W 1-3 pm

Office hours are available in-person, or via Teams (“Dyer Office Hours Spring 23-24”). I’ll assume in-person unless you let me know otherwise.

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Contact information for instructor and TA is also available on Blackboard.

This course introduces the statistical methods used by geographers to analyze and interpret geographical data and solve geographical problems. Material in the course will provide you the skills to critically evaluate literature you encounter in your studies, and in day-to-day life. It will also provide you analytical tools to carry out your own research, such as you will do in GEOG 4800: Capstone Experience in Geography. Course topics include descriptive statistics, sampling design, probability, hypothesis testing, statistical association, correlation, and regression analysis.

Required Textbook:

- *Statistics for People Who (Think They) Hate Statistics* (5th ed.), by Neil Salkind and Bruce Frey. Access is provided through Blackboard, as part of the Digital Course Materials: Inclusive Access Program. The reduced cost of the book (\$39) is automatically billed to your account. You have the option of “upgrading” to a hard copy. (You can also opt out of the program and purchase the book on your own (\$115). (If you do, be sure to purchase the “Excel” version of the book.). **You should read the assigned chapters before the topic is presented in lecture.** See the Lecture and Reading Schedule below.

Technology:

- We will use Blackboard for downloading (and uploading) data and assignments. (PDFs of lectures are also posted there.)
- Activities, exercises, and quizzes/exams will be performed in-class, so **you will need to bring your laptop to each class session.** Talk to me right away if this presents a problem.
- Mac users: Access to some items through Blackboard can be “glitchy” using Safari (e.g., accessing the textbook, opening Excel files). It is recommended that you use **Firefox or Chrome** as your browser.
- Most of the assignments and activities will be performed using **Excel**, so you will need Microsoft Office on your computer (vs. through a web browser). There is a link to OIT on Blackboard.
- Also on Blackboard is a link for installing Excel’s **Analysis ToolPak**, which you will need for many statistical tests.
- Finally, you will use the interactive **Top Hat** to respond to slides presented in lecture, using your personal devices (smart phones, tablets, laptops, etc.). You are required to create a Top Hat account and bring your device to class each day. Instructions are (you guessed it) provided on Blackboard.
 - Note: by clicking on the “Gradebook” tab in Top Hat, you can see the questions asked during lecture, and the correct answers. This can be very helpful for studying.

Grading:

GEOG 2710 is required of all Geography majors, who need to earn a minimum grade of at least a C-

Percent of Course Grade	Activity	Description
45	Exams	Three exams (including non-cumulative final), involving computations, as well as multiple choice, T/F, and short answer
20	Homework	Practice problems assigned throughout the semester.
20	Assignments	Additional problem sets handed out over the semester that integrate course material, using your chosen dataset (climate data or census data).
10	In-class quizzes	Based on your daily score of correctly-answered Top Hat questions, designed to reinforce newly-presented material. I will drop your lowest four scores.
5	Attendance	The average percentage of times you responded to a Top Hat question each day.

Grading scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93-100%	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	≤59

It is expected that students will work together to understand the material and to complete some of the tasks. However, activities turned in for credit should reflect the individual student's knowledge, comprehension, and abilities. (Simply copying material from another student is considered plagiarism.) Academic dishonesty includes (but is not limited to) sharing answers on graded assignments, misrepresenting your reason for a missed coursework, presenting another person's work as your own, or using advantages not approved by the instructor. Any form of academic dishonesty will result in a "0" for that assignment. Cases of academic misconduct may also be reported to the Office of Community Standards and Student Responsibility, which may impose additional sanctions. (Students may appeal any academic sanctions through the grade appeal process.)

Special Circumstances

If you are unable to participate in the course during the semester for a legitimate reason (e.g., illness, death in your immediate family, religious observance, jury duty, required military reserve training, involvement in University-sponsored activities), notify me ASAP about making up the missed material. (Note: misrepresenting your reasons for missing course activities constitutes academic dishonesty; see paragraph above.) Barring extraordinary circumstances, students should contact me about missed activities before the next class period.

Any student who suspects s/he may need a disability-based accommodation should contact me privately to discuss specific needs, and provide me written documentation from the Office of Student Accessibility Services. If you are not yet registered as a student with a disability, you should contact that office.

TENTATIVE LECTURE AND READING SCHEDULE (Subject to change)

Week (beginning)	Topic:	Readings: (color-coded to topics)
Week 1 (Jan. 17 [W])	Course introduction; Geographic data Excel basics	Chapter 1 Chapters 2, 5
Week 2 (Jan. 22)	Descriptive statistics: Central tendency Descriptive statistics: Dispersion and variability [<i>Homework 1</i>]	Chapter 3 Chapter 4
Week 3 (Jan. 29)	Probability, the normal distribution, and z-scores [<i>Homework 2</i>]	Chapter 9
Week 4 (Feb. 5)	Hypothesis testing and statistical significance	Chapters 8, 10
Week 5 (Feb. 12)	Central Limit Theorem (CLT) and Confidence Intervals (CI)	[no new readings]
Week 6 (Feb. 19)	Exam 1 Monday Feb 19 (through "CLT and CI") One-sample Z-test	Chapter 11
Week 7 (Feb. 26)	<i>Intro to Assignment 1</i> t-test for independent samples [<i>Homework 3a</i>]	Chapter 12
Week 8 (Mar. 4)	Mann-Whitney U test [<i>Homework 3b</i>]	[no new readings]
Spring Break March 10-16		
Week 9 (Mar. 18)	t-test for dependent samples (matched pairs) [<i>Homework 3c</i>]	Chapter 13
Week 10 (Mar. 25)	Analysis of Variance (ANOVA) <i>Intro to Assignment 2</i>	Chapter 14
Week 11 (Apr. 1)	<i>Landscape Ecology conference, Oklahoma City</i>	
Week 12 (Apr. 8)	Exam 2 Wednesday Apr 10 (z-, t-, and Mann-Whitney U tests) Correlation [<i>Homework 4</i>]	Chapters 6, 16
Week 13 (Apr. 15)	Regression <i>Intro to Assignment 3</i>	Chapter 17
Week 14 (Apr. 22)	Chi-square (χ^2) test Other non-parametric tests (Kruskall-Wallace, Kolmogorov-Smirnov)	Chapter 18 [no new readings]

FINAL EXAM: Wednesday, May 1st at 10:10 am

Non-cumulative, covering the material "ANOVA" through the last week