

# **GEOG 5185** IgradI **Statistical Research Methods in Geography**



Spring, 2022 ▪ Tuesday/Thursday 12:30 – 1:50 PM ▪ ENV 340

## **Why Should You Take This Course?**

- Geographic research is inherently diverse, which in turn means that researchers across geography need a broad tool kit to address the wide range of problems to be solved.
- Also important to acknowledge: geographic research can be done poorly. If this happens, this bad research reflects poorly on all geographers. Geographers need to be properly educated to avoid this.
- Given the above, everyone in the geography community needs to understand the basic types of questions that can be addressed through statistical analysis, and the range of statistical options that we can draw on that match the issues geographers commonly encounter.
- You will find these needs addressed here.

**Instructor:** Dr. Murray D. Rice  
**Office:** ENV 310G  
**E-Mail:** [rice@unt.edu](mailto:rice@unt.edu)  
**Telephone:** (940) 597-9307

**Weekly Office Hours:**  
Tue, 2:00 – 3:00 pm in Person at ENV 310G  
Thu, 2:30 – 3:30 via Zoom

**Online Course Materials:** See Course Pages on Canvas

## **What you'll need for this course:**

- **The online course learning resource reference (we'll discuss this website in class)**



- **Weekly ability to access Canvas and other site for resources posted there**
- **Time management skills**
- **Willingness to work & learn**



**Class Web Site (Course Overview):**  
<http://www.murrayrice.com/geog-4185.html>

# What Should You be Able to do by the End of this Course?

- Define and understand key terminology related to statistical research in geography, including “statistics”, “data”, “research”, “sample”, “population”, and others
- Explain the meaning of “probability” as a foundational concept in the establishment of statistical research
- Communicate the meaning and application of “statistical tests”
- Articulate the need for both “parametric” and “non-parametric” statistical tests
- Ability to correctly define and use a “null hypothesis” and an “alternative hypothesis” for a statistical test
- Facility in fully and logically documenting the results of a statistical test
- Proficient in selecting among the range of possible tests of difference that can be used in statistical research
- Apply categorical tests in the correct situations
- Master the application of the full range of comparative tests examined in this class
- Define the terms “correlation” and “regression” and correctly discriminate between the two terms
- Demarcate the need for both parametric and non-parametric regression
- Fully express the need for spatial statistics
- Implement both point and area-based spatial statistics in an applied setting

**Course Text:** The required textbook for this course is the online statistics reading and SPSS tutorial source, <https://statistics.laerd.com/>.

Laerd has very reasonable subscription packages available for 1, 3, and 6 month terms (for example, a 6 month subscription to the site currently costs \$12.95).

Other secondary readings and resources are also required and listed by week in the schedule portion of this syllabus and in our course module pages in Canvas. Details on access to all readings will be announced in class.



# How Can You Succeed in this Course?

In addition to the many grade-earning opportunities that await you this semester, your success in this class will be determined by **how well you manage your time** and **how engaged you are with the class activities**.

More specifically:



**Show up to class, and be on time** Aim to be in class so you catch all the great subject matter we're exploring in class each day. I always look forward to seeing you in class! However, if something like a family emergency or a lost dog prevent you from attending, if possible, please send me an email ahead of time so I know not to expect you that day.



**Know the class schedule** Half of the problems people have in busy classes like this one come from not realizing what's coming up. Please track what's happening in each week of classes beforehand. Knowing what is due in class and what is expected that week will help you get the most out of your education investment. One more hint: looking ahead through the entire semester's schedule can help you identify weeks that are really heavy. This gives you a chance to get an early start on work for those tough weeks. Use the grade breakdown to the right to help you prioritize what is important.



**Do the weekly reading** Each class will typically involve some sort of reading beforehand that will often relate to something we will do in class that day. I will always assume you have done that reading and are ready to use that knowledge in class.



**Contact me when problems come up** I want to hear from you when you have questions or issues with class. I especially want to talk with you if you feel like you're getting behind and things are falling out of control. You can succeed in this class! I am here to help.

## Overall Grades Summary

60%	<b>Statistics Labs</b> (5 Labs, take the best 4 lab grades to calculate your lab score)
30%	<b>Discussion Question Participation*</b>
10%	<b>Quizzes</b> (2 in Total)
100%	<b>Course Total</b>

\* All students have access to class discussion spaces in Canvas where weekly topics will be explored. This participation grade will come from assessment of two kinds of contributions to these discussions through the semester: your original thoughts, and your responses to your classmates.

**It is not essential to pass any particular lab, discussion question set, or quiz to pass the class, but relative success in each will impact your final grade.**

# Course Guidelines

**Course Philosophy:** I am here to organize the course and introduce you to the topics and readings we will examine. I don't have all the answers and I don't pretend to have all the answers, but I will share with you from what I know. I will do my best to make the course interesting, relevant, and challenging.

This being said, it's important to note that you have the most important role in making GEOG 5185 a success for you. You will determine how much you actually get out of this course. Doing the readings outlined, completing and contributing to all group assignments, and coming to class ready to think and participate in the discussions we will have, puts you in the best position to benefit from what this course offers. I encourage you to make full use of the learning opportunities that this class presents.

**Quiz and Lab Due Dates:** Quiz and lab due dates are set in advance for everyone's good, will not be changed except for emergencies. It is your responsibility to plan outside activities so they will not conflict with class dates. If you have a true emergency on an exam day, please contact me as soon as possible following the exam to explain the circumstances and make alternative exam arrangements.

**Late Policy:** Anything handed in late\* will be subject to a single, flat 10% penalty. Late work will not be accepted for credit after graded work has been returned to the class. Graded work is usually returned to the class a maximum of one week after the due date. I will grant exceptions to the above late policy if you can provide documentation substantiating a valid emergency.

**Accommodation for Students with Disabilities:** The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at 940.565.4323.

**Attendance:** I will not take attendance during the semester, with the exception of our first week of class meetings (and those attendances will simply be to conform to UNT policy). Despite the lack of attendance taking, please note that it is to your advantage for you to participate in all class either live or via class recordings. I ask that you please make every effort to attend all classes.

**Extra Credit:** The Department of Geography does not allow extra credit assignments (work not specified on a course syllabus).

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\* "Late" = anything handed in after the beginning of class on the designated due date.

**Rules of Engagement** Rules of engagement refer to the way students are expected to interact with each other and with their instructors online. Here are some general guidelines:

- Treat your instructor and classmates with respect in email or any other communication.
- Always use your professors' proper title: Dr. or Prof., or if in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to your instructor by first name.
- Use clear and concise language.
- Remember that all college level communication should have correct spelling and grammar (this includes discussion boards).
- Avoid slang terms such as "wassup?" and texting abbreviations such as "u" instead of "you."
- Use standard fonts such as Arial, Calibri or Times New Roman and use a size 10 or 12 point font
- Avoid using the caps lock feature AS IT CAN BE INTERPRETTED AS YELLING.
- Limit and possibly avoid the use of emoticons like :) or .
- Be cautious when using humor or sarcasm as tone is sometimes lost in an email or discussion post and your message might be taken seriously or sound offensive.
- Be careful with personal information (both yours and other's).
- Do not send confidential information via e-mail

See these Engagement Guidelines (<https://clear.unt.edu/online-communication-tips>) for more information.



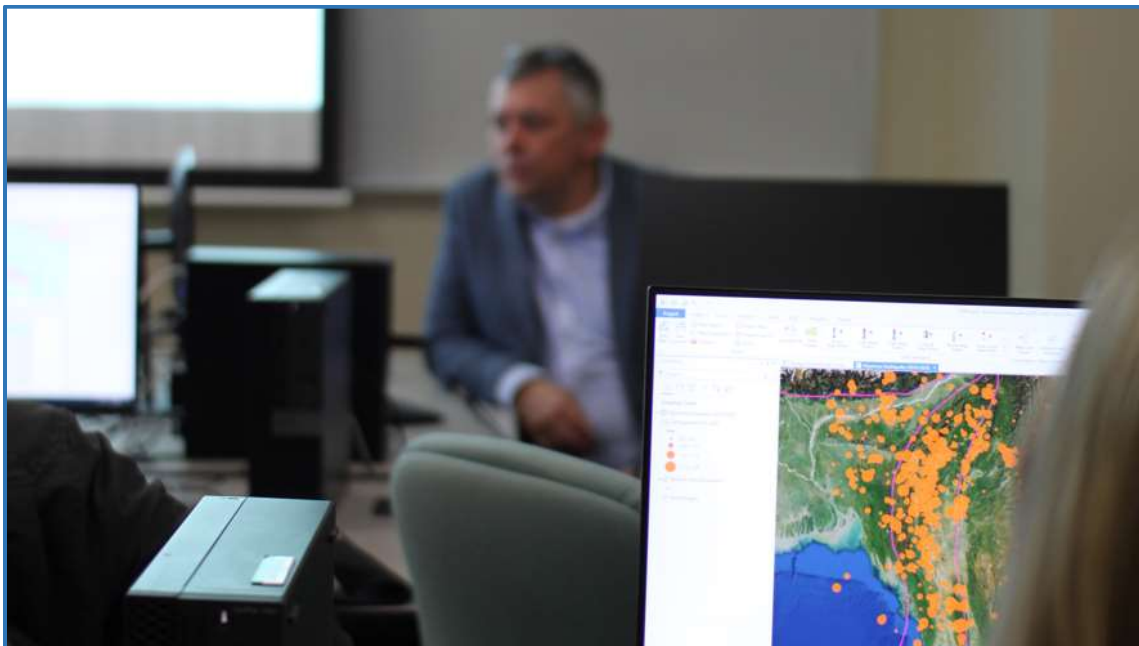
**Academic Dishonesty:** Academic dishonesty in this course will be penalized according to University of North Texas rules and regulations, ranging from a mark of 0 on a test or assignment, a grade of “F” in the class, to possible suspension or expulsion from the university, depending on the precise nature and circumstances of the dishonesty. Learning what is dishonest and how to stay away from such conduct is good preparation for a successful career.

To help you avoid academically dishonest behavior, the Center for Student Rights and Responsibilities at the University of North Texas has developed a definition of academic dishonesty and a set of strategies to protect yourself from being accused of academically dishonest behavior.

The following is a summary of definitions and strategies from CSRR:

### Forms of Academic Dishonesty

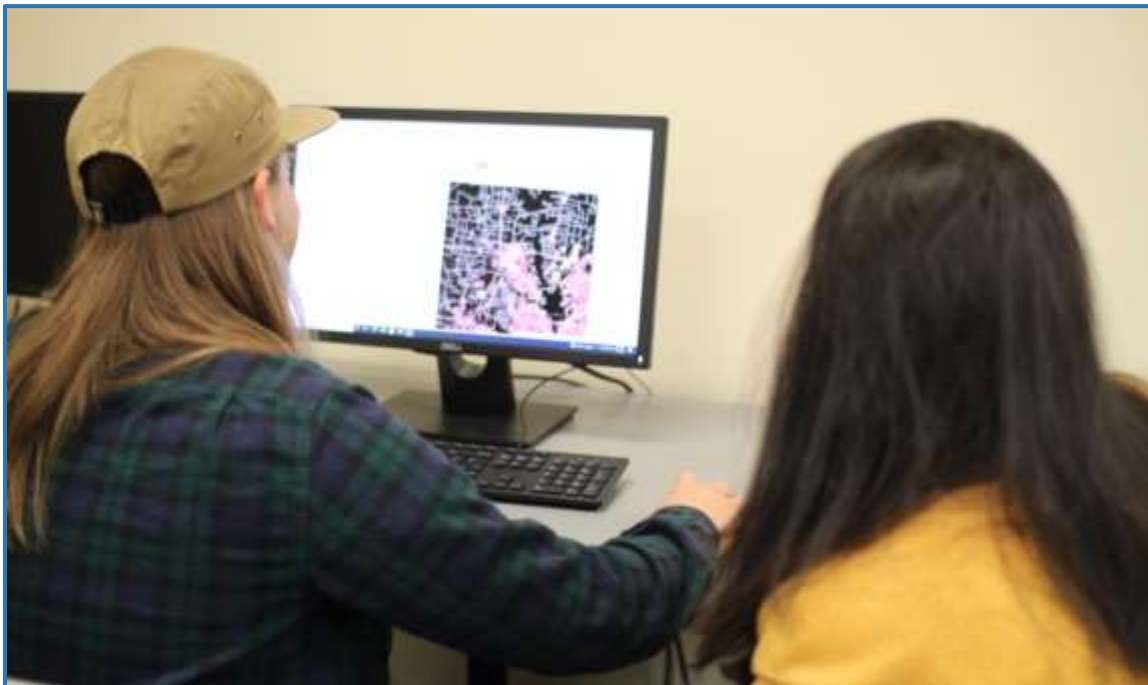
- **Cheating:** intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise. The term academic exercise includes all forms of work submitted for credit or hours.
- **Plagiarism:** the deliberate adoption or reproduction of ideas, words or statements of another person as one’s own without acknowledgement.
- **Fabrication:** intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
- **Facilitating academic dishonesty:** intentionally or knowingly helping or attempting to help another to violate a provision of the institutional code of academic integrity.



## **Proactive Strategies to Protect Yourself from Charges of Academic Dishonesty:**

1. Prepare thoroughly for examinations and assignments.
2. Take the initiative to prevent other students from copying your exam or assignments, e.g., shield your answer sheet during examinations, do not lend assignments to be turned in to other students.
3. Check your faculty member's course syllabus for a section dealing with academic dishonesty for that course. There may be special requirements. If you cannot find a written section in the syllabus, ask the faculty member what his/her expectations are.
4. Consult the Code of Student Conduct for a detailed definition of academic dishonesty.
5. Do not look in the direction of other students' papers during examinations.
6. Utilize a recognized handbook for instruction on citing source materials in papers.
7. Consult with individual faculty or academic departments when in doubt.
8. Utilize the services of the University Writing Center, located in room 105 of the Auditorium Building, for assistance in preparing papers.
9. Discourage dishonesty among other students.
10. Refuse to assist students who cheat.

**Please see the closing pages of this syllabus for a collection of UNT Policies that are directly relevant to you and your wellbeing as a student at UNT.**



# Pandemic-Related Guidance

**COVID-19 Impact on Attendance:** While attendance is expected as outlined above, it is important for all of us to be mindful of the health and safety of everyone in our community, especially given concerns about COVID-19. Please contact me if you are unable to attend class because you are ill, or unable to attend class due to a related issue regarding COVID-19. I ask this so I can help, not so I can count any absence against your grade (I won't do this)

If you are experiencing any symptoms of COVID-19 (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or [askSHWC@unt.edu](mailto:askSHWC@unt.edu)) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Hotline at 844-366-5892 or [COVID@unt.edu](mailto:COVID@unt.edu) for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. While attendance is an important part of succeeding in this class, your own health, and those of others in the community, is more important.

**Class Materials for Remote Instruction:** Remote instruction may be necessary if community health conditions change or you need to self-isolate or quarantine due to COVID-19. Students will need access to a webcam and microphone to participate in fully remote portions of the class. Additional required classroom materials for remote learning include: ability to run Zoom software and a high-speed internet connection. Information on how to be successful in a remote learning environment can be found at <https://online.unt.edu/learn>.

**Statement on Face Covering:** Face coverings are required in all UNT facilities. Students are expected to wear face coverings during this class. If you are unable to wear a face covering due to a disability, please contact the Office of Disability Access to request an accommodation. UNT face covering requirements are subject to change due to community health guidelines. Any changes will be communicated via the instructor.



# Overview of Graded Tasks

**I. Statistics Labs:** Together with our regular class discussions, the five statistics labs scheduled throughout the course provide the biggest opportunity for you to learn the practical meaning of the concepts we cover in this course.

Submission of materials for all 5 labs is required to pass the course. However, your cumulative lab score to be used in the calculation of your final course grades will come from the best 4 grades out of the grades you achieve on all 5 labs.

**UNT GEO**  
**GEOG 4185/5185**  
**STATISTICAL RESEARCH METHODS IN GEOGRAPHY**

**LAB 1: INTRODUCTION TO THE SPSS SOFTWARE PACKAGE AND BASIC APPLICATION OF Z-SCORES**

**Scenario:** You are a data analyst with the United States Department of Commerce. Your current assignment is to provide your supervisor with an overall assessment of population trends in the United States over the last several decades.

The state population values in the table in the appendix (and available on the GEOG 4185 website) represent the percentage distribution of the American population by state, obtained from the US Census for the 1960 and 2010 censuses.

**Software Skills Outcomes:** You will use SPSS to assist you in depicting the overall profile of population change at the state level in the United States between 1960 and 2010. In the process, you will become acquainted with basic features of the SPSS statistical package and user interface.

**Key Concepts Addressed in this Lab:**

- Terminology: Element, Sample, Population, Variable
- Measurement Scales
- Conversion Between Measurement Scales
- Using Z-Scores to Define Extreme Categories in a Dataset

**Lab 1: Introduction to SPSS, Z-Scores**

**Lab 2: Setting Up in SPSS for Further Analysis**

**Lab 3: A Rigorous Approach to Comparative Testing in SPSS**

**Lab 4: Correlation and Regression: Analysis in SPSS**

**Lab 5: Special Statistics in the Magnitude 0-10 Package**

Exercise Credit: In addition to receiving this lab using the SPSS statistical package, the student received additional credits, and earned this lab credit from all 5 Labs.

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**STATISTICAL RESEARCH METHODS IN GEOGRAPHY**

**Statistical Research Methods Lab Assessment**

Student Name(s): \_\_\_\_\_

Lab 1: Introduction to the SPSS Software Package and Basic Application of Z-Scores

**1. Rough Notes: Pre-Analysis Reflections (Task 1)** /100  
Did you read & complete and thoughtfully reflect on the software installation manual first?

**2. Rough Notes: SPSS Output (Tasks 2-4)** /200  
Did you submit the complete set of output requested in the exercise assignment? Did you follow all directions related to the SPSS software you selected?

**3. Rough Notes: Responses & Commentary (Tasks 2-4)** /200  
Did you provide complete and thoughtful answers for all assignment questions, questions listed in the assignment manual?

**4. Final Report: Completeness** /100  
Did you complete all required items, all data requested, items, and clearly readable output?

**5. Final Report: Organization** /100  
Did your final report create a compelling and concise summary that answered questions. Did you make an attempt at analyzing and application to the problem at hand?

Overall Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Total Report Grade: \_\_\_\_\_ out of 1000

Each lab has been designed to address a standard set of elements that contribute to your learning in three dimensions:

- **A real-world scenario** for the lab problem, so you can better understand how the topical focus for that lab week applies to actual research practice.
- **A specification of the software skills that you will learn and use** in that week's lab. Cumulatively, you can catalog how your software skills will grow through the semester by tracking the entire list of skills represented in all five labs.
- **A summary of the key concepts from class** that are addressed in each lab. While we will not be able to address every concept and method from class in a lab, we will aim to cover as many concepts from across the entire course as possible.

Lastly, note that each lab comes with an **instructions and guidelines document**, and an **assessment page** that includes a checklist of material needed for your lab submission. Any data you need will be provided on Canvas – see the appropriate module for these data links. Cumulatively, these quizzes are worth 60% of your final course grade.

**2. Discussion Questions:** I have established a series of weekly discussion questions (“DQs”) to start our class conversation online. There are two or three discussion questions per week, which for your reference I summarize for the entire semester in a separate discussion question document (see module one in Canvas for this document). I will also make each week’s DQs available in our weekly Canvas modules.

Please join in the online DQ discussion forum for each week in Canvas. The expectation is that each student will, on average, provide at least thoughtful contribution to each discussion. Cumulatively, your participation in the group discussion on all DQs is worth 10% of your final course grade.

**3. Quizzes:** You will complete two quizzes to test your knowledge through the semester. The quizzes will take place in weeks 4 and 8. Each will have some mix of fill in the blank, multiple choice, and true & false questions. Quiz #1 covers weeks 1-4, while quiz #2 covers weeks 5-8. Cumulatively, these quizzes are worth 10% of your final course grade.

**GEOG 4185/5185**  
**STATISTICAL RESEARCH**  
**METHODS IN GEOGRAPHY**

**UNT**  
**GEO**

**Quiz #1**

**February, 2021**

**Covering**

- **Week 1:** Motivation & Fundamentals
- **Week 2:** Probability, Distributions, Z-Scores
- **Week 3:** Normal and Poisson Probabilities, Statistical Testing Basics
- **Week 4:** Tails in Testing and Sampling Issues

Name: \_\_\_\_\_

**Part One: Fill in the Blank (10 Questions, 1 point per question)**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_

**GEOG 4185/5185**  
**STATISTICAL RESEARCH**  
**METHODS IN GEOGRAPHY**

**UNT**  
**GEO**

**Quiz #2**

**March, 2021**

**Covering**

- **Week 5:** Data Description & Transformations
- **Week 6:** Estimators from Samples, Sample Size Determination
- **Week 7:** Comparative Statistics – Mann-Whitney U Test, t-Test
- **Week 8:** Chi-Square Test (1 Sample, 2 Sample, 3 or More Sample)

Name: \_\_\_\_\_

**Part One: Fill in the Blank (10 Questions, 1 point per question)**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_

# What are We Doing in this Course?

Please read the following schedule carefully. Note that all weeks marked with an **QUIZ** indicator have a discussion questions set due on Tuesday. Also, all weeks marked **LAB** have statistical lab time on the *Thursday* of that week (split concept/lab focus that week). Also, all weeks that have either a Mid-Term Exam, a Lab Session, or a Lab Due are highlighted with one of three graphic indicators meant to alert you to that special activity.



= Quiz This Week



= Lab Session This Week



= Lab Due This Week



= Discussion Question This Week

**Readings:** the readings for each week come from the required *Laerd* online resource, plus more readings as noted and accessible through the course website (details on access to these readings will be provided the first day of class).

## PART I – INTRODUCTION: STATISTICAL CONCEPTS AND MATH FOUNDATIONS

### Week 1 (Week of Jan 17)



### Course Introduction: Motivation & Fundamentals

Laerd “Creating a New File”, “Data Setup”, “Types of Variable”. See any materials listed in the Canvas Module for this week.

- Introduction to course goals
- Importance and need for note-taking
- Discussion of basic terms for course, including statistics, data, research, element, sample, population, variable
- Two Basic Types of Statistical Methods: Inferential vs. Descriptive Statistics
- Geographical Data
- Scales of Measurement
- Why is statistical research is so important for society

## LAB I TIME

Week 2 (Week of Jan 24)



Thursday Lab

### ***Intro to Probability, Distributions, Z-Scores***

Laerd “Opening a File” and “Calculating a Z-Score” (be sure you have also completed the Laerd readings for last week). See any other materials listed in the Canvas Module for this week.

- What is “probability”?
- Theoretical Probability versus Empirical Probability
- Use of probability in the context of descriptive statistics
- Basic approaches to probability: non-parametric and parametric
- Probability Distributions
- Z-Scores

**Lab I (Introduction to Probability Using SPSS Including Z-Score Application: Thursday Work Session)**

Week 3 (Week of Jan 31)



**DQ**

Lab I Debrief

### ***Normal and Poisson Probabilities, and Statistical Testing Basics***

Laerd “Testing for Normality”, “Independent-Samples t Test”. See any materials listed in the Canvas Module for this week.

- ✓ **Lab I Pre-Submission Debrief This Week**
- Normal Probability Distribution
  - Background, Examples
  - Fitting the Normal Curve to Data
  - Using the Normal Table
  - Foundations of Testing for a Normal Distribution
- Poisson Distribution
  - Background, Examples
  - Relevance
  - Meaning
- Introduction to Statistical Testing
  - Hypotheses
  - Assumptions
  - Critical values, test statistics, and the p-value

Each “debrief” is an in-class opportunity to discuss the practical meaning of the lab. We will have a debrief session for each lab.

# PART 2 – SIGNIFICANCE TESTING & SAMPLING

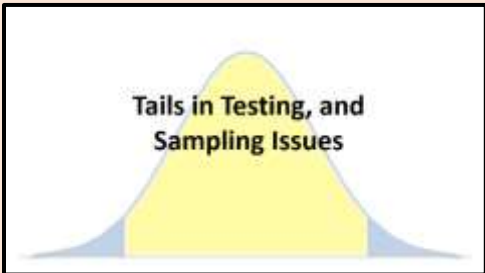
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Week 4 (week of Feb 7)

**Tails in Testing and Sampling Issues**

Chapman et. al (2014) Chapter 9

See any materials listed in the Canvas Module for this week.



- ✓ **Lab 1 Due on Tuesday This Week**
- ✓ **Quiz #1 This Week**

- One versus Two-Tailed Tests
- Samples and Sampling
  - Sampling Methods

**LAB 1  
DUE**

**LAB 2 TIME**

Week 5 (week of Feb 14)

**Data Description and Transforming Distributions**

Laerd “Testing for Normality”, “Transforming Data”

See any materials listed in the Canvas Module for this week.



**DQ**

**Thursday Lab**

- Description
  - Central Tendency
  - Dispersion
  - Skewness and Kurtosis
- Transforming Data
  - What Transformations Are
  - Why you do them
  - Major Types

**Lab 2 (Setting Up in SPSS for Further Analysis: Thursday Lab Session)**

**Week 6 (week of Feb 21)**

***Estimates from Samples and Sample Size***



**Lab 2 Debrief**

***Determination***

Chapman et. al (2014) Chapter 7

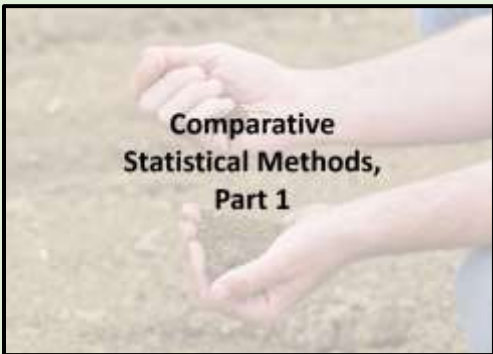
See any materials listed in the Canvas Module for this week.

- ✓ **Lab 2 Pre-Submission Debrief This Week**
- Estimates from Samples
  - Estimating the Mean
  - Estimating the Standard Deviation
  - Estimates from Small Samples
  - Estimating Proportions
- Sample Size
- Overview of Comparative Tests
- Six Steps of a Formal Statistical Test
- K-S Test

## **PART 3 – FOUNDATIONAL STATISTICAL METHODS & APPLICATIONS**

**Week 7 (week of Feb 28)**

***Comparative Statistical Methods, Part I***



Laerd “Mann-Whitney U Test”, “One-Sample t Test”, “Independent-Samples t Test”, Paired-Samples t Test”. See any materials listed in the Canvas Module for this week.

- ✓ **Lab 2 Due on Tuesday This Week**
- Overview of available options
- Six Steps of a Formal Hypothesis Test
  - Summary
  - Example
- Mann-Whitney U Test
- Student’s t Test

**LAB 2  
DUE**





### Week 8 (week of Mar 7)

### **Comparative Statistical Methods, Part II**

Laerd “Chi-Square Test of Association”.

See any materials listed in the Canvas Module for this week.



✓ **Quiz #2 on Thursday This Week**

- Chi Square test
  - One Sample
  - Two Sample
  - Three or More Sample

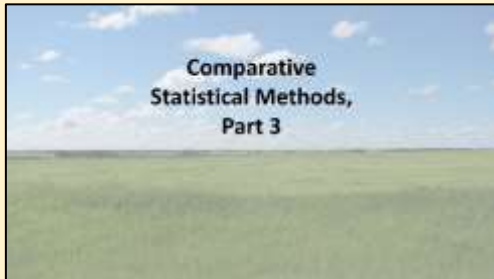
## Spring Break (week of Mar 14)

### LAB 3 TIME

### Week 9 (week of Mar 21)

### **Comparative Statistical Methods, Part III**

Laerd “One-Way ANOVA”, “Two-Way ANOVA”, “Three-Way ANOVA”, “Kruskal-Wallis H Test”. See any materials listed in the Canvas Module for this week.



- ANOVA
- ANOVA and Correlation Analysis
- Kruskal-Wallis H Test
- Errors and Inferential Statistics
  - Type I versus Type II Errors

### Thursday Lab

**Lab 3 (A Rigorous Approach to Comparison Testing in SPSS: Thursday Work Session)**

**Week 10 (week of Mar 28)**

**Relationships: Correlation**



Laerd “Pearson’s Correlation”. See any materials listed in the Canvas Module for this week.

**Lab 3 Debrief**

✓ **Lab 3 Pre-Submission Debrief This Week**

- The Meaning of Correlation
- Typology of Correlation Coefficients
  - Phi
  - Pearson
  - Spearman Rank
- Calculation of Each Correlation Measure
- Introduction to Correlation in a Multivariate Context
  - Partial Correlation Coefficients
  - Multiple Correlation Coefficient

**LAB 4 TIME**

**Week 11 (week of Apr 4)**

**Trends: Simple Linear Regression**



Laerd “Linear Regression”. See any materials listed in the Canvas Module for this week.

✓ **Lab 3 Due on Tuesday This Week**

- Regression Concept
  - Form of Relationship
  - Strength of Relationship
- Simple Linear Regression
  - Calculation
  - Assumptions
  - Residuals and their analysis
  - Confidence Limits

**LAB 3 DUE**

**DQ**

**Thursday Lab**

**Lab 4 (Correlation and Regression Analysis in SPSS: Thursday Work Session)**



## Week 12 (Apr 11)



**Lab 4 Debrief**

### **Multiple Regression Modeling**

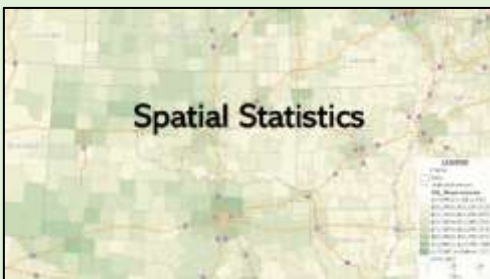
Laerd “Standard Multiple Regression”. See any materials listed in the Canvas Module for this week.

✓ **Lab 4 Pre-Submission Debrief This Week**

- Multiple Regression
  - Basic Idea and Interpretation
  - Partial Regression Coefficients
  - Beta Coefficients
  - Multicollinearity
  - Use of Dummy Variables
    - Dummy Variables and Multicollinearity
  - Multiple Regression and Geographic Space
    - Introduction to Geographically Weighted Regression

## PART 4 – AN INTRODUCTION TO SPATIAL STATISTICS

## Week 13 (Apr 18)



**LAB 4  
DUE**

**DQ**

### **Spatial Statistics: Point and Areal Patterns**

Boots and Getis “Point Pattern Analysis”, Chapter 1 (e-book), Odland “Spatial Autocorrelation”, Chapter 1 (e-book). See any materials listed in the Canvas Module for this week.

✓ **Lab 4 (Correlation and Regression) Due on Tuesday This Week**

- Point Pattern Analysis
- Areal Pattern Analysis

## LAB 5 TIME

### Week 14 (Apr 25)



### *Spatial Statistics: Trend Surface Analysis*

Unwin "Trend Surface Analysis" (e-book). See any materials listed in the Canvas Module for this week.

- Smoothing and Trend Surface Analysis

**Lab 5 (Spatial Point and Areal Pattern Analysis in Maptitude: Thursday Work Session)**

**Thursday Lab**

## PART 5 – COURSE REVIEW AND CONCLUSION

### Week 15 (May 2)



### *Summary and Synthesis*

No reading for this week.

- ✓ **Lab 5 (Spatial Point and Areal Pattern Analysis) Due on Tuesday This Week (No Pre-Submission Debrief for this Lab Only)**
- Summary and review of key course concepts and applications

**LAB 5  
DUE**

**End of Course**

# Sources Referenced in the Course Reading List

Each of the following books and other publications provide excellent background reading for this course. We will examine selected chapters from each book listed in this course, along with our required course textbooks. Some marked readings are available through links on the course website. Aside from the Church and Murray course textbook, none of the books listed below are available in the UNT bookstore, but copies of most are available through online retailers such as Amazon. The Rice and Hernandez course textbook is available through the Applied Geography Conference website (link provided on course website).

Boots, B. and A. Getis (1988) *Point Pattern Analysis*. Beverly Hills, CA: Sage Publications.

Laerd (no date) Laerd Statistics. <https://statistics.laerd.com/> Nottingham, UK: Lund Research.

Odland, J. (1987) *Spatial Autocorrelation*. Beverly Hills, CA: Sage Publications.

Unwin, D. (1978) *An Introduction to Trend Surface Analysis*. CATMOG 5. Norwich, UK: Geo Abstracts, University of East Anglia.

**My goal in this course is for your time here to be of great value to you.** This course provides concepts and skills you will find a helpful starting-point for a career in geography. However, even if you follow a career path outside of geography, my hope is that this course will provide you with insights into analytical methods that can help you in many ways.

Please do not hesitate to let me know if there is anything else we can do, beyond what you see in this course package, that could be useful in preparing you for your future.

# UNT Policies

**Academic Integrity Policy:** Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

**ADA Policy:** UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website (<https://disability.unt.edu/>).

**Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004):** The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

**Emergency Notification & Procedures:** UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

**Retention of Student Records:** Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

**Acceptable Student Behavior:** Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's Code of Student Conduct (<https://deanofstudents.unt.edu/conduct>) to learn more.

**Access to Information - Eagle Connect:** Students' access point for business and academic services at UNT is located at: [my.unt.edu](http://my.unt.edu). All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail Eagle Connect (<https://it.unt.edu/eagleconnect>).

**Student Evaluation Administration Dates:** Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 [insert administration dates] of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" ([no-reply@iasystem.org](mailto:no-reply@iasystem.org)) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website (<http://spot.unt.edu/>) or email [spot@unt.edu](mailto:spot@unt.edu).

**Sexual Assault Prevention:** UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at [SurvivorAdvocate@unt.edu](mailto:SurvivorAdvocate@unt.edu) or by calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at [oeo@unt.edu](mailto:oeo@unt.edu) or at (940) 565 2759.

## Important Notice for F-I Students taking Distance Education Courses

**Federal Regulation:** To read detailed Immigration and Customs Enforcement regulations for F-I students taking online courses, please go to the Electronic Code of Federal Regulations website (<http://www.ecfr.gov/>). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-I students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and

does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-I student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

**University of North Texas Compliance:** To comply with immigration regulations, an F-I visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

- (1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.
- (2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-I student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email [internationaladvising@unt.edu](mailto:internationaladvising@unt.edu)) to get clarification before the one-week deadline.

**Student Verification:** UNT takes measures to protect the integrity of educational credentials awarded to students enrolled in distance education courses by verifying student identity, protecting student privacy, and notifying students of any special meeting times/locations or additional charges associated with student identity verification in distance education courses.

See UNT Policy 07-002 Student Identity Verification, Privacy, and Notification and Distance Education Courses (<https://policy.unt.edu/policy/07-002>).

**Use of Student Work:** A student owns the copyright for all work (e.g. software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student's permission unless all of the following criteria are met:

- The work is used only once.
- The work is not used in its entirety.
- Use of the work does not affect any potential profits from the work.
- The student is not identified.
- The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student's written permission.

**Download the UNT System Permission, Waiver and Release Form:** Transmission and Recording of Student Images in Electronically-Delivered Courses

1. No permission is needed from a student for his or her image or voice to be transmitted live via videoconference or streaming media, but all students should be informed when courses are to be conducted using either method of delivery.
2. In the event an instructor records student presentations, he or she must obtain permission from the student using a signed release in order to use the recording for future classes in accordance with the Use of Student-Created Work guidelines above.
3. Instructors who video-record their class lectures with the intention of re-using some or all of recordings for future class offerings must notify students on the course syllabus if students' images may appear on video. Instructors are also advised to provide accommodation for students who do not wish to appear in class recordings.

Example: This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

No notification is needed if only audio and slide capture is used or if the video only records the instructor's image. However, the instructor is encouraged to let students know the recordings will be available to them for study purposes.

**Class Recordings & Student Likenesses:** Synchronous (live) sessions in this course will be recorded for students enrolled in this class section to refer to throughout the semester. Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.

## Academic Support & Student Services

### Student Support Services

**Mental Health:** UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- Student Health and Wellness Center (<https://studentaffairs.unt.edu/student-health-and-wellness-center>)
- Counseling and Testing Services (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- UNT Care Team (<https://studentaffairs.unt.edu/care>)
- UNT Psychiatric Services (<https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry>)
- Individual Counseling (<https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling>)

**Chosen Names:** A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name and would like that to be used in class, please let the instructor know. Below is a list of resources for updating your chosen name at UNT.

- UNT Records
- UNT ID Card
- UNT Email Address
- Legal Name

\*UNT eulDs cannot be changed at this time. The collaborating offices are working on a process to make this option accessible to UNT community members.

**Pronouns:** Pronouns (she/her, they/them, he/him, etc.) are a public way for people to address you, much like your name, and can be shared with a name when making an introduction, both virtually and in-person. Just as we ask and don't assume someone's name, we should also ask and not assume someone's pronouns.

You can add your pronouns to your Canvas account so that they follow your name when posting to discussion boards, submitting assignments, etc.

Below is a list of additional resources regarding pronouns and their usage:

- o What are pronouns and why are they important?
- o How do I use pronouns?
- o How do I share my pronouns?
- o How do I ask for another person's pronouns?
- o How do I correct myself or others when the wrong pronoun is used?

Additional Student Support Services

- Registrar (<https://registrar.unt.edu/registration>)
- Financial Aid (<https://financialaid.unt.edu/>)
- Student Legal Services (<https://studentaffairs.unt.edu/student-legal-services>)
- Career Center (<https://studentaffairs.unt.edu/career-center>)
- Multicultural Center (<https://edo.unt.edu/multicultural-center>)
- Counseling and Testing Services (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- Pride Alliance (<https://edo.unt.edu/pridealliance>)
- UNT Food Pantry (<https://deanofstudents.unt.edu/resources/food-pantry>)

Academic Support Services

- Academic Resource Center (<https://clear.unt.edu/canvas/student-resources>)
- Academic Success Center (<https://success.unt.edu/asc>)
- UNT Libraries (<https://library.unt.edu/>)
- Writing Lab (<http://writingcenter.unt.edu/>)

