

## **GEOG 204 – Spatial Analysis**

Section 001, 4 Credits

Spring 2020

**Instructor:** Dr. Arthur J. Lembo, Jr.

**Office:** Henson Hall 157H

**Office Hours:** M,W,F 9:00-11:00am; (also by appointment)

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**Class Meetings:** MWF 11 – 11:50 a.m., T 3:00 – 4:15 p.m.; Henson Hall 153

**Text:** *Introduction to Statistical Problem Solving in Geography*, 3rd Edition, Waveland Press. McGrew, Lembo, Monroe. (available at bookstore, Amazon.com, Waveland.com, and BarnesandNoble.com). You can get the first 3 chapters free [here](#).

**Workbook:** *Workbook for Statistical Problem Solving in Geography*. Lembo. (available through lulu.com, createspace.com, and Amazon.com – see Professor for coupon code before ordering).

**Course Description:** This course will introduce the basics of statistics and their applications in geographic research. You will be exposed to both descriptive and inferential statistics, with an emphasis on geographic applications. This course focuses on statistical analysis and spatial statistics, since these methods are crucial to anyone having to deal with spatially-oriented problems. Applications from both human and physical geography will be used for in-class examples and out-of-class exercises. In class, problems will be presented and output interpreted using Minitab statistical software or Excel, but you may use any software system you wish. After finishing this class, students are expected to be able to know how to collect data, choose the appropriate statistical techniques and analyze the data according to their research questions.

**Exams:** This course has a total of three exams during the semester as well as a final exam. Each exam is worth 60 points and the final exam is worth 120 points (a total of **300 points** for all exams). Each exam will be administered as scheduled. All exams count for a portion of the final grade; none can be dropped. Very few if any numerical calculations are required in the exams. Questions are a mix of objective (multiple choice, matching, fill in, simple graphics) and essays. Questions involve: (1) basic knowledge of the characteristics and factual information associated with a statistical technique or concept; (2) understanding and interpretation of the purposes and objectives of a technique; (3) explanation of why a technique is important, and the limitations of the technique; (4) creative identification of geographic problems that can be solved by a technique; and (5) the ability to decide which statistical technique is most appropriate, when presented with a geographic data set of a research problem. Students are not allowed to leave the classroom during the exam.

There are also 3 Lab Practicum Exams each worth 50 points (a total of **150 points**). The practicum exams will be open book and require the use of a computer to perform the calculations.

**Make-up Exams:** Any student missing an exam must supply the instructor with a written excuse. It is the **student's responsibility** to inform the instructor of the missed exam **within one class day** after the original exam is given in order to schedule a make-up exam. Anyone failing to comply with this policy will receive a zero for the missed exam.

**Exercises:** This course has a total of 15 exercises worth 10 points each (a total of **150 points** for all exercises). The exercises are designed to reinforce the lecture and should be completed during the lab time. Students will submit their workbook at the end of lab to be checked. If an exercise is turned in late, **the penalty is 5 points per school day late**. Additional decisions to alter exercise assignments or points may have to be made during the semester as conditions warrant, and the instructor reserves the right to make these decisions.

**Grades:** This course has a total of 600 points. Each student's grade for this course will be determined by a percentage based on the total points accumulated by that individual, divided by the total number of points possible (600). Letter grades will be assigned as follows:

Letter Grade	Percentage of Points
A	90.00 – 100%
B	80.00 – 89.99%
C	70.00 – 79.99%
D	60.00 – 69.99%
F	0.00 – 59.99%

**Attendance:** Attending class is important. Coming to class, paying attention and taking notes is the best way to learn the course material. Most lectures will come from the textbook, but some material will only be presented in class.

\*\*\*\*\* [PLEASE NOTE SCHOOL POLICY FOR THE H1N1 VIRUS](#) \*\*\*\*\*

**Classroom Environment:** Students are expected to contribute to an environment appropriate for learning that considers and respects the needs and rights of others. Any academic misconduct will be confronted and handled accordingly – students disrupting class will be asked to leave. **Please silence all electronic devices while in class.** Do not arrive late and do not leave early – the door will be closed at 11:05.

**Academic Integrity:** Cheating, plagiarism and other forms of academic dishonesty will not be tolerated in this course. Students should pay special attention to the expectations discussed in the 2005-2006 Student Handbook and 2005-2007 University Catalog. Violating these rules will result in significant grade penalties up to and including a failing grade for the course. Extreme cases of academic misconduct can result in expulsion from the University.

**Writing Across the Curriculum:** All writing assignments, both formal and informal, are in support of Salisbury University's Writing Across the Curriculum Program.

**Important University Dates for Fall**

**Last day to drop/add – January 31**

**Last day to withdraw from course to receive a “W” – April 3**

**Changes to Syllabus:** This syllabus may be modified or changed by the instructor as necessary. Students will be notified of the changes in class.

## Approximate Schedule – Spatial Analysis – Spring 2020

Week	Date	Topic
Ch. 1	Monday, January 27	<a href="#">An introduction to spatial analysis.</a> Role of Statistics in Geography. Examples of Statistical Problems
	Tuesday, January 28	The Context of statistical techniques. Geographic Data: Characteristics and Preparation  Geographic Data: Characteristics and Preparation
Ch. 2	Wednesday, January 29	<b>Lab Assignment 1: Chapter 1</b>
Ch. 3	Friday, January 31	<b>Lab Assignment 2: Chapter 2</b>
Ch. 3	Monday, February 3	Descriptive Statistics and Graphics: Central tendency, Dispersion and Variability.
	Tuesday, February 4	<b>Lab Assignment 3: Chapter 3</b>
	Wednesday, February 5	Descriptive Statistics and Graphics: Shape or relative position.
	Friday, February 7	Spatial Data and Descriptive Statistics
Ch. 4	Monday, February 10	Descriptive Spatial Statistics
	Tuesday, February 11	<b>Lab Assignment 4: Chapter 4</b>
Ch. 5	Wednesday, February 12	Basic Probability and Discrete Probability Distributions
Ch. 5	Friday, February 14	Basic Probability and Discrete Probability Distributions
Ch. 6	Monday,	Continuous Probability Distributions

	February 17	
	Tuesday, February 18	<b>Lab Assignment 5: Chapter 5</b>
Ch. 6	Wednesday, February 19	Continuous Probability Distributions and exam review
	Friday, February 21	<b>Exam 1 chapters 1 – 4</b>
Ch. 6	Monday, February 24	Continuous Probability Distributions
	Tuesday, February 25	<b>Lab Assignment 6: Chapter 6</b>
Ch. 7	Wednesday, February 26	Basic Element of Sampling
	Friday, February 28	Basic Element of Sampling
Ch. 8	Monday, March 2	Estimation in Sampling
	Tuesday, March 3	<b>Lab Assignment 7: Chapter 7</b>
Ch. 8	Wednesday, March 4	Estimation in Sampling
	Friday, March 6	Estimation in Sampling
Ch. 9	Monday, March 9	Elements of Inferential Statistics
		<b>Lab Practicum 1</b>
	Wednesday, March 11	Elements of Inferential Statistics
	Friday, March 13	<b>Exam 2 chapters 5, 6, and 7</b>
Ch. 10	Monday, March	<b>SPRING BREAK</b>

	16	
	Wednesday, March 18	<b>SPRING BREAK</b>
	Friday, March 20	<b>SPRING BREAK</b>
Ch. 11	Monday, March 23	One sample tests and Two Sample Tests
	Tuesday, March 22	<b>Lab Assignment 8: Chapter 8</b>
	Wednesday, March 25	Two Sample Tests
Ch. 12	Friday, March 27	Two sample tests
Ch. 12	Monday, March 30	Two sample difference of proportions
	Tuesday, March 31	<b>Lab Assignment 9: Chapter 9</b>
	Wednesday, April 1	Matched pairs test Three or more sample tests
	Friday, April 3	Three or more sample tests Exam review
Ch. 15	Monday, April 6	Inferential spatial statistics; point patterns
	Tuesday, April 7	<b>Lab Assignment 10: Chapter 10</b>
	Wednesday, April 8	Point pattern analysis
	Friday, April 10	<b>Exam 3 chapters 8, 9, 10, and 11</b>
Ch. 15	Monday, April 13	Area pattern analysis, continued
	Tuesday, April 14	<b>Lab Assignment 11: Chapter 14</b>

Ch. 16	Wednesday, April 15	Correlation
Ch. 16	Friday, April 17	Practicum review
	Monday, April 20	Area pattern analysis, continued
	Tuesday, April 21	<b>Lab Practicum</b>
	Wednesday, April 22	Linear regression
Ch. 17	Friday, April 24	Linear regression, continued
Ch. 17	Monday, April 27	Multivariate regression
	Tuesday, April 28	<b>Lab Assignment 12: Chapters 14,15</b>
Ch. 18	Wednesday, April 29	Multivariate regression, continued
Ch. 12	Friday, May 1	<b>Lab Assignment 13: Chapter 16</b>
	Monday, May 4	Multivariate regression
	Tuesday, May 5	<b>Final Exam</b>
Ch. 12	Wednesday, May 6	<b>Lab Assignment 14: Chapters 17, 18</b>
	Friday, May 8	<b>Lab Assignment 14: Chapters 17, 18</b>
		<b>Final Practicum Thursday, May 11: 10:45 – 1:15</b>