GEOG 204 – Spatial Analysis
Section 001, 4 Credits
Spring 2019

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 4:00 – 5:40 p.m.; Henson Hall 153

<u>**Text:**</u> *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**.

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

<u>**Course Description:**</u> 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.

<u>**Exams:**</u> 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 2 Lab Practicum Exams each worth 50 points (a total of **100** points). The practicum exams will be open book and require the use of a computer to perform the calculations.

<u>**Make-up Exams:**</u> 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 10 exercises worth 10 points each (a total of **100 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 500 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 (500). Letter grades will be assigned as follows:

Letter Grade	Percentage of Points	Total Points
A	90.00 – 100%	450 – 500
B	80.00 – 89.99%	400 – 449
C	70.00 – 79.99%	350 – 399
D	60.00 – 69.99%	300 – 349
F	0.00 – 59.99%	Below 300

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 Spring
Last day to drop/add – February 2
Last day to withdraw from course to receive a "W" – April 6

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 2018

Week	Date	Topic	Exercises (All laboratory exercises on are Tuesday)
Ch. 1	Monday, January 28, 2018	An introduction to spatial analysis. Role of Statistics in Geography. Examples of Statistical Problems	
Ch. 2	Wednesday, January 30, 2018	The Context of statistical techniques. Geographic Data: Characteristics and Preparation	
Ch. 3	Friday, February 01, 2018	Geographic Data: Characteristics and Preparation	**Exercise 1: chapters 1 and 2**
Ch. 3	Monday, February 04, 2018	Computer software overview	
	Wednesday, February 06, 2018	Descriptive Statistics and Graphics: Central tendency, Dispersion and Variability. Descriptive Statistics and Graphics: Shape or relative position.	
	Friday, February 08, 2018	Spatial Data and Descriptive Statistics	**Exercise 2: chapter 3**
Ch. 4	Monday, February 11, 2018	Descriptive Spatial Statistics	
Ch. 5	Wednesday, February 13, 2018	Basic Probability and Discreet Probability Distributions	
Ch. 5	Friday, February 15, 2018	Basic Probability and Discreet Probability Distributions	**Exercise 3: Chapters 4 and 5**
Ch. 6	Monday, February 18, 2018	Continuous Probability Distributions	
Ch. 6	Wednesday, February 20, 2018	Continuous Probability Distributions and exam review	
	Friday, February	**Exam 1 chapters 1 - 4**	

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Ch. 6	Monday, February 25, 2018	Continuous Probability Distributions	
Ch. 7	Wednesday, February 27, 2018	Basic Element of Sampling	
	Friday, March 01, 2018	Basic Element of Sampling	**Exercise 4: chapters 6 and 7**
Ch. 8	Monday, March 04, 2018	Estimation in Sampling	
Ch. 8	Wednesday, March 06, 2018	Estimation in Sampling	
	Friday, March 08, 2018	Estimation in Sampling	**Exercise 5: chapter 8**
Ch. 9	Monday, March 11, 2018	Elements of Inferential Statistics	
	Wednesday, March 13, 2018	Elements of Inferential Statistics	
	Friday, March 15, 2018	**Exam 2 chapters 5, 6, and 7**	
Ch. 10	Monday, March 18, 2018	**SPRING BREAK**	
	Wednesday, March 20, 2018	**SPRING BREAK**	
	Friday, March 22, 2018	**SPRING BREAK**	
Ch. 11	Monday, March 25, 2018	One sample tests and Two Sample Tests	
	Wednesday, March 27, 2018	Two Sample Tests	
Ch. 12	Friday, March 29,	Two sample tests	**Exercise 6: chapter 9 and 10**

	2018		
Ch. 12	Monday, April 01, 2018	Two sample difference of proportions	
	Wednesday, April 03, 2018	Matched pairs test Three or more sample tests	
	Friday, April 05, 2018	Three or more sample tests Exam review	**Exercise 7: Chapter 9**
Ch. 15	Monday, April 08, 2018	Inferential spatial statistics; point patterns	
	Wednesday, April 10, 2018	Point pattern analysis	
	Friday, April 12, 2018	**Exam 3 chapters 8, 9, 10, and 11**	**Exercise 8: Chapter 10 (q. 1,2,6,7) Chapter 11 (q. 1, 3)**
Ch. 15	Monday, April 15, 2018	Lembo away – matched pairs lab	
Ch. 16	Wednesday, April 17, 2018	Lembo away – ANOVA lab	
Ch. 16	Friday, April 19, 2018	Practicum review	
	Monday, April 22, 2018	Area pattern analysis, continued	**Lab Practicum**: Tuesday, April 23
	Wednesday, April 24, 2018	Correlation	
Ch. 17	Friday, April 26, 2018	Correlation	**Exercise 9: chapter 16**
Ch. 17	Monday, April 29, 2018	Linear regression	
Ch. 18	Wednesday, May 01, 2018	Linear regression, continued	

	Friday, May 03, 2018	Linear regression, continued	**Exercise 9: chapter 16**
Ch. 18			
	Monday, May 06, 2018	Multivariate regression	
Ch. 18	Wednesday, May 08, 2018	Multivariate regression, continued	
	Friday, May 10, 2018	Multivariate regression, continued	**Exercise 10: chapter 17**
	Monday, May 13, 2018	Exam review	**Lab Practicum, May 14**
		Final Exam Thursday, May 16: 10:45 – 1:15	