DEPARTMENT: BIOSTATISTICS & BIOINFORMATICS (BIOS)

COURSE NUMBER: BIOS 500L-3 **SECTION NUMBER:** 3111

CREDIT HOURS: 1 **SEMESTER:** Fall 2018

COURSE TITLE: Statistical Methods I (Laboratory)

CLASS HOURS AND LOCATION: Wed 5:00 pm – 6:50 pm, GCR P-45

INSTRUCTOR: Josip Derado

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OFFICE HOURS: Wednesday 7:00 pm – 8:00 pm, GCR P-45

COURSE DESCRIPTION

The lab portion of BIOS 500 is designed with the main purpose to practice the statistical methods learned in BIOS 500. To achieve this, we teach a few basics of SAS, a widely used statistical software package, *as an analytical tool to implement those methods taught in lecture*. Please recognize that the purpose of the lab is not to teach complex SAS programming statements or data management. Students who wish to learn more about SAS programming should enroll in BIOS 531 or EPI 533.

MPH/MSPH FOUNDATIONAL COMPETENCIES:

1. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate
2. Interpret results of data analysis for public health research, policy or practice

CONCENTRATION COMPETENCIES:

1. BMSPH2: Use statistical software for both data management and data analyses, including coding of custom techniques.
2. BMSPH3: Apply custom statistical methods as needed to address public health or medical problems.
3. B3: Estimate the sample size in the context of a given standard public health study design

COURSE LEARNING OBJECTIVES:

By the end of the semester, you should be able to:

- Produce, read, and interpret statistical output for methods learned in BIOS 500 lecture.
- Use SAS, a statistical software package that is widely used in the public health field.

Although we teach only a small amount of SAS, this amount provides a stepping-stone to learning more about the software.

Our overarching principle is that statistics is easiest to learn and most meaningful when students are given the chance to manipulate and explore real data.

EVALUATION

Web site: **courses.emory.edu (Canvas)**

Grading:	Homework	60%
	Data Analysis Assignment	10%
	Quiz I	15%
	Quiz II	15%

Grading Scale:	[95 – 100]: A	[85 – <90]: B+	[66 -<76]: C
	[90 – <95]: A-	[80 – <85]: B	[< 66] : F
		[76 – <80]: B-	

COURSE STRUCTURE

MPH/MSPH Foundational Competency assessed	Representative Assignment
Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate	1. Labs 1-9, weekly homework
Interpret results of data analysis for public health research, policy or practice	Labs 7- 8 & homework assignments
Concentration Competencies assessed	**Representative Assignment**
Use statistical software for both data management and data analyses, including coding of custom techniques.	1. Lab 2-9; homework assignments 2. Lab Quizzes
Apply custom statistical methods as needed to address public health or medical problems	1. Labs 7-9; homework assignments 2. Lab Quizzes

See Course Calendar below (pg. 6)

COURSE POLICIES

SAS@home:

As you learned during orientation, SAS is available via Citrix. More information may be obtained at https://www.sph.emory.edu/rollins-life/resources/it/rsph-desktop/ Link to RSPH desktop: https://rsphcitrix.sph.emory.edu/vpn/index.html. Contact the Help Desk at 404-727-5536 or help@sph.emory.edu with any questions or problems about using SAS on your personal computer.

WARNING: Do not use the BIOS Department lab on the 3rd floor—it is strictly for students in the Biostatistics degree program and is off-limits to all others. Thank you for your cooperation.

Preparation for Lab

Preparation: Electronic copies of the lab notes will be made available on both Canvas and the Course Drive by Sunday evening. Students may print and bring the notes to lab each week.

Bring the notes with you to lab: If you find that the speed of your typing hinders your learning experience during the lab session, type the programs before class and save them to your RSPH H-drive or e-mail the program to yourself. You may then run the pre-written program, fixing any errors during lab.

Conduct during Lab

You are to use the computers for SAS programming only, except when instructed to do otherwise. Browsing the internet, checking email, etc. is distracting to the students around you, and disrespectful to your instructor. Any students causing such a disruption will be asked to leave.

Lab Homework

Instructions for each homework exercise will be posted on Canvas as word documents. Before completing each homework exercise, review the relevant lab notes and lecture material. Each exercise allows you to practice with real data that is different from the in-lab data. We believe that the only way you will conquer SAS and internalize statistical concepts and methods is to apply them repeatedly.

This learning strategy implies not only that repetition is essential but also that skills build upon one another. Thus, we expect you to recall all you have learned earlier in the semester so that you can successfully complete an exercise.

What to submit and where to submit it: All homework assignments will have a written component to turn in; a hard copy must be given to your TA at the start of your next lab. No

emailed copies unless you are out of town or ill. Some exercises might have an electronic component to submit. Once you have completed your exercise, you will submit these answers via Canvas. The submission method will be explicitly noted on each exercise.

Homework Due Dates

Paper component: at the beginning of your next lab session.
Canvas component (if applicable): no later than 10 minutes before your next lab session.

Late homework cannot be accepted, except in the case of a verifiable emergency. If you think you have an acceptable reason for turning in an assignment late, first contact your instructor. Be proactive; if you have a planned absence, tell us *before* the fact, not after. Acceptance of late homework is the decision of your instructor.

Quizzes
In-class; Open-notes; may consist of written and/or online portions. Students must work **completely** on their own.

Data Analysis Assignment
This will be a culminating assignment that is more detailed than a typical homework, and scored separately. More details will be provided as the semester progresses

Rules for working with other Students: Students are allowed to work together on homework, as long as the **collaboration** enhances learning; working together simply to get homework answers will be considered a violation of the Honor and Conduct Code. Generally, homework will be due the week following lab as specified in the assignment. Some assignments will be online; others will have to be turned in on paper.

Grade Adjustment Requests: Generally, adjustments to grades are not made unless an obvious grading error has occurred. Requests for a review of graded homework or quizzes must be received within 72 hours of graded papers being returned to students. Requests should be sent to the lab instructor; adjustments are made at the sole discretion of the instructor.

RSPH POLICIES

<u>Accessibility and Accommodations</u>

Office of Accessibility Services (OAS) works with students who have disabilities to provide reasonable accommodations. In order to receive consideration for reasonable accommodations, you must contact OAS. It is the responsibility of the student to register with OAS. Please note that accommodations are not retroactive and that disability accommodations are not provided until an accommodation letter has been processed.

Students who registered with OAS and have a letter outlining their academic accommodations are strongly encouraged to coordinate a meeting time with me to discuss a protocol to implement the accommodations as needed throughout the semester. This meeting should occur as early in the semester as possible.

Contact Accessibility Services for more information at (404) 727-9877 or accessibility@emory.edu. Additional information is available at the OAS website at http://equityandinclusion.emory.edu/access/students/index.html

Honor Code

You are bound by Emory University's Student Honor and Conduct Code. RSPH requires that all material submitted by a student fulfilling his or her academic course of study must be the original work of the student. Violations of academic honor include any action by a student indicating dishonesty or a lack of integrity in academic ethics. *Academic dishonesty refers to cheating, plagiarizing, assisting other students without authorization, lying, tampering, or stealing in performing any academic work, and will not be tolerated under any circumstances.*

The RSPH Honor Code states: "Plagiarism is the act of presenting as one's own work the expression, words, or ideas of another person whether published or unpublished (including the work of another student). A writer's work should be regarded as his/her own property." (http://www.sph.emory.edu/cms/current_students/enrollment_services/honor_code.html)

COURSE CALENDAR

Tentative Schedule

Aug 29-30	No LAB
Sept 4-5	Lab 1: Introduction to SAS
Sept 11-12	Lab 2: In-stream input; descriptive statistics and procedures; SAS libraries; creating permanent SAS datasets
Sept 18-19	Lab 3: SAS data step details: Modifying SAS datasets; IF-THEN statements;
Sept 25 - 26	Lab 4: SAS data step details: Data merging, concatenating, and formats.
Oct 2-3	Lab 5: Probability Functions in SAS
Oct 9-10	*Fall Break Oct 8-9. No LAB*
Oct 16-17	Review/Practice Quiz 1
Oct 23-24	Quiz 1
Oct 30-31	Lab 6: One-sample t-tests, Wilcoxon Signed Rank test, Confidence Intervals
Nov 6-7	Lab 7: Paired t-test, Two-sample t-test
Nov 13-14	Review for Data Analysis Assignment / Lab 8: Chi-square tests
Nov 20-21	*NO LAB Thanksgiving Break*
Nov 28-29	Review Quiz 2/ Graphics
Dec 4-5	Quiz 2

Note: This weekly outline is subject to change during the semester. Students are required to check the class Canvas site frequently and regularly for updates.

Bios 500 “No Switch” Policy

Bios 500 is scheduled through the BIOS ADAP, with the assistance of all departmental ADAPs, to accommodate departmental schedules and program needs. We make every effort to avoid major course conflicts. Because of the large number of students registered in this course each fall, it is impossible to schedule classes and labs around the private schedules of each individual student. In an attempt to be fair and consistent to all students, we have a strict policy of no switching or changing allowed for this course. We receive a large number of requests each semester, all valid and understandable, but we cannot grant one request without granting all requests, and because of the complexity of the scheduling system for this course, this would be impossible.