University of Florida
College of Public Health and Health Professions
PHC 4094 – Introduction to Biostatistics for Health Science and Public Health (3 credits)
Fall 2017

Instructor: Steven Foti, PhD
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Office Hours: Thursdays 10am-12pm, or by appointment.
Office: CTRB 5227

Classroom: HPNP G210
Time: Tuesdays 3-3:50pm, Thursdays 1:55-3:50pm

Course Overview: This 3-credit course provides an introduction to some concepts and methods of biostatistical data analysis that are widely used in health sciences and public health. The topics include analysis of variance to compare three or more population means, correlation, simple linear regression, multiple linear regression, nonparametric and distribution-free statistical methods, and some basic concepts about survival analysis. Public health examples are used for demonstration. Students will practice preparing and interpreting data analysis reports.

Course Structure: The course will use a flipped structure, with students asked to view the week's instructional videos and/or readings prior to attending class on Tuesday. Weekly quizzes due by 1pm on Tuesday will be used to assess comprehension of the week's material. Tuesdays in class we will expand on the week's content through descriptive examples. Thursdays in class we will participate in weekly activities with group-based work or class-discussion. Students will be asked to complete handouts provided for each activity. These handouts must be turned in within one week and will be graded in place of traditional homework assignments.

Course Objectives: It is expected that by the end of this course students will be able to:

1. Discuss the purpose and role of Biostatistics in the field of Public Health
2. Understand the process of consulting/collaborating with a biostatistician to design and analyze a study
3. Appraise data sources and data quality when selecting appropriate data for research questions
4. Describe the different types of data typically found in Public Health and clinical studies
5. Develop judgment about which statistical technique to use in a given situation
6. Interpret results from an ANOVA test in a public health context
7. Interpret coefficients from single and multiple linear regression computer output and characterize them in a public health context

8. Conduct hypothesis tests on 2x2 tables using Chi-squared or Fisher's exact test methods
9. Understand how sensitivity and specificity of a diagnostic test impact how the test is used in the population
10. Characterize the limitations of parametric statistical methods as they are applied to specific research settings and recognize nonparametric alternatives
11. Identify settings in which survival analysis is the preferred analytical approach
12. When reading journal articles, identify potential errors and limitations in the analyses
13. Prepare clear oral or written summaries interpreting data in its public health context
14. Recognize the limitations of statistical testing (e.g. clinical vs. statistical significance, debate about p-values)

Course Materials: This course will use the Canvas CMS. For issues with technical difficulties please contact the instructor or Academic Technology at the following:

Email: learning-support@ufl.edu
Phone: (352)392-HELP – select option 2
Web: https:/lss.at.ufl.edu/help.shtml

Course announcements will be made via Canvas. Students are responsible for being aware of any course announcement within 24 hours of it being posted.

Required Text: There is no required text for this class. Course readings will be available on Canvas.

Optional text: ***Statistics: The Art and Science of Learning from Data*** by Alan Agresti and Christine Franklin 3rd Edition, Pearson, 2013.

Course Requirements

Quizzes (Weekly, Online)

Students are asked to view required videos and/or readings prior to attending class on Tuesday. There will be weekly quizzes to assess your comprehension of concepts and knowledge of requisite information needed to be successful in this course. The quizzes are in the Canvas course site and are directly related to each week's required videos/readings. You will have 2 attempts to complete each quiz and the highest score will be recorded. Quizzes are due by 1pm on Tuesday providing the instructor time to review quiz results and address any common questions about the material in that day's lecture. These quizzes will help you evaluate your understanding of course content by providing you feedback on your performance.

Weekly Activities (Hands-On Activities and Discussions)

Each Thursday the class will engage in a weekly activity. All students will be expected to view course content, come prepared, contribute during class activities, participate in team-based problem solving, and share in class discussions. Since research is most often done collaboratively, your interactions with peers will contribute to learning.

In place of homework, students must provide clean and complete copies of weekly activities handouts for assessment. Handouts are to be submitted online (Word document, PDF, scanned document) or in person. Assignments are due the following Thursday at the start of class. Students may work together but are expected to individually prepare their handout. Complete, clean, correct, and on-time assignments will receive 5 points. Assignments that are messy, incorrect, or no more than one day late will receive 3 points. Assignments that are mostly incomplete or more than one day late will receive 0 points. The lowest grade from the semester will be dropped.

Exams (Midterm 10/05/17, Final 12/12/17)
There will be two exams in this course. Exams will be closed book, but students will be allowed to bring one page of notes. Additional details on the exam and the exact format of the one page of notes will be provided closer to the time of each exam.

Data Analysis Project (Due 11/16/17)
You will prepare a linear regression data analysis using output from a standard statistical package. You will be asked to properly interpret the output in a public health context. Additional details on the data analysis project will be provided after we complete our in-class data analysis activity.

Professionalism
In a flipped classroom, we will engage in weekly activities involving group work and class discussion. Students are expected to come prepared for class and actively participate in activities. Attendance is not required, but students should notify the instructor if they will need to miss class. For more information on professionalism will be assessed, a rubric is available on Canvas.

Grading

Point Distribution:

Quizzes – 5%
Weekly Activities – 25%
Midterm Exam – 25%
Data Analysis Project – 15%
Final Exam – 25%
Professionalism – 5%

Late Work: Late weekly activity assignments will be marked late 5 minutes after the start of class and will not be accepted more than 1 day late; late assignments will be deducted points. In general, late work will not be accepted unless arrangements have been made ahead of the due date with the instructor.

Grading Scale: The final grade will be computed on the basis of the following assessments:

Points earned	**93-100**	**90-92**	**87-89**	**83-86**	**80-82**	**77-79**	**73-76**	**70-72**	**67-69**	**63-66**	**60-62**	**Below 60**
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

Academic Integrity: Each student is bound by the academic honesty guidelines of the University that state: "The students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code." And, each student, upon submission of an assignment, implies the pledge:

"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/
http://gradschool.ufl.edu/students/introduction.html

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

SUPPORT SERVICES

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, you must register with the Dean of Students Office http://www.dso.ufl.edu within the first week of class. The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with the instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: http://www.counseling.ufl.edu. On line and in person assistance is available.
- You Matter We Care website: http://www.umatter.ufl.edu/. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: https://shcc.ufl.edu/
- Crisis intervention is always available 24/7 from:
- Alachua County Crisis Center:
  (352) 264-6789

http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx

BUT – Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

Tentative Course Schedule

Instructor reserves the right to modify the course schedule with advance notice provided to students.

	Dates	**Weekly Topics and In-Class Activities**
WEEK 1	Aug 22	Introduction & Review
	Aug 24	*In-Class Activity*: Demographic data
WEEK 2	Aug 29	ANOVA
	Aug 31	*In-Class Activity:* ANOVA online tool
WEEK 3	Sept 5	Correlation
	Sept 7	*In-Class Activity*: Guerrant *et al.* journal club
WEEK 4	Sept 12	Simple Linear Regression
	Sept 14	*In-Class Activity:* Least squares online tool
WEEK 5	Sept 19	Multiple Linear Regression
	Sept 21	*In-Class Activity*: Elias *et al.* journal club
WEEK 6	Sept 26	Additional Topics in Regression
	Sept 28	*In-Class Activity*: Regression data analysis

WEEK 7	Oct 3	Midterm Exam Review
	Oct 5	***Midterm Exam***
WEEK 8	Oct 10	Summaries of 2x2 Tables
	Oct 12	*In-Class Activity*: Clinical vs. statistical significance journal club
WEEK 9	Oct 17	Testing of 2x2 Tables
	Oct 19	*In-Class Activity:* Gardasil data
WEEK 10	Oct 24	Screening
	Oct 26	*In-Class Activity:* Prostate cancer screening
WEEK 11	Oct 31	Guest Lecture (***Data analysis project due***)
	Nov 2	*In-Class Activity*: P-values journal club
WEEK 12	Nov 7	Nonparametric Tests
	Nov 9	*In-Class Activity*: Statistical consultation
WEEK 13	Nov 14	Nonparametric Tests (continued)
	Nov 16	*In-Class Activity*: Non-parametric testing
WEEK 14	Nov 21	Clinical Trials
	Nov 23	***Thanksgiving***
WEEK 15	Nov 28	Survival Analysis
	Nov 30	*In-Class Activity*: Goss *et al.* journal club
WEEK 16	Dec 5	Final Exam Review
	TBD	***Final Exam***