University of Florida
College of Public Health & Health Professions Syllabus
PHC 6075: Biostatistical Literacy (3 credit hours)
Fall: 2020
Delivery Format: Online
Course Website: http://elearning.ufl.edu

Instructor Name: Steven Foti, PhD
Room Number: remote
Phone Number: 352-294-5922 (office)
Email Address: fotisj@ufl.edu
Office Hours: R 10am-12pm, or by appointment
Teaching Assistants: none
Preferred Course Communications: email, Canvas message, Discord (invite in Canvas)

Prerequisites

This course is intended for graduate students in the health sciences and requires a basic knowledge of mathematics, including algebra (for example, MAC 1105 & MAC 1114, or MAC 1140, or equivalent).

PURPOSE AND OUTCOME

Course Overview

Research in the health sciences requires appropriate study design, statistical analysis and interpretation of results. This course covers concepts and techniques, including survival data, multiple-group comparisons, and non-linear regression, necessary to read, interpret, and critically evaluate statistical results in health science literature relevant to the interests of the student.

Biostatistical Literacy will cover the following concepts:

- study design,
- descriptive statistics,
- hypothesis testing,
- confidence intervals,
- group comparisons,
- odds ratios,
- relative risks,
- multiple linear, logistic, and proportional hazards regression,
- power analysis,
- and survival analysis

This course offers no formal training in statistical software.

Relation to Program Outcomes

This is a biostatistics service course that covers important concepts for understanding, interpreting, and critically analyzing research literature. The topics covered and literature examples used are tailored toward students in the health sciences.

Course Objectives and/or Goals

Upon completion of the course, students will be able to:

1) Describe common statistical methods for formulating questions, collecting appropriate data, analyzing data, and interpreting results from data.
2) Recognize the components of the statistical problem solving process when reading research literature in their field.
3) Describe various statistical designs and identify practical issues regarding their use.
4) Interpret output from statistical analysis programs.
5) Set up appropriate methods, models, parameters and hypotheses for a variety of problems related to estimation and hypothesis testing for population means or proportions, linear regression, and survival analysis.
6) Critically evaluate statistical content in the literature in their field.

Instructional Methods

The emphasis in this course will be on learning by doing. Collaborative groups will be used to both foster learning and to obtain experience in collaborating with others on a research team. Weekly activities will focus on exploring concepts learned in class and applying them when reading research literature. Each week, students will read and critically analyze at least one article from the field of medicine or public health. Students will also work in small groups to find and critically evaluate a research article in their area of interest.

This course will be primarily taught in an asynchronous, online format through Canvas. Each week, we will have one 50-minute, optional, synchronous session via Zoom that will be recorded for those that cannot make it. At the beginning of the semester, we will attempt to choose a time that works for as many class participants as possible. While asynchronous, the course will still follow a weekly schedule and will include a mix of reading materials, quizzes, and activities that can be completed individually or in a group.

DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

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

	Dates	Topic	Readings & *Project*
Week 1	Aug. 31	Syllabus/Introduction	None
Week 2	Sept. 7	Introduction to Biostatistics	Ch. 1, 2, 3 *Form project team*
Week 3	Sept. 14	Introduction to Survival Data	Ch. 5 *Look for article*
Week 4	Sept. 21	Confidence Interval for a Proportion	Ch. 4 *Finalize article*
Week 5	Sept. 28	Summarizing Continuous Variables	Ch. 7, 9
Week 6	Oct. 5	Confidence Interval for a Mean	Ch. 10, 12, 14 *Complete guideline map*
Week 7	Oct. 12	Hypothesis Testing	Ch. 15, 16, 17, 18, 19 *Start working on Article Review*
Week 8	Oct. 19	Challenges in Statistics	Ch. 20, 22, 23, 24, 25, 26 *Continue Article Review*
Week 9	Oct. 26	Statistical Tests, Part 1	Ch. 27, 28 *Finalize Article Review*
Week 10	Nov. 2	Statistical Tests, Part 2	Ch. 29, 30, 31

	Dates	Topic	Readings & *Project*
Week 11	Nov. 9	Communicating Risk	Ch. 42
Week 12	Nov. 16	Correlation and Regression	Ch. 32, 33 *Start Literature Activity project* *Sign up for peer's LA project*
Week 13	Nov. 23	Multiple Linear Regression	Ch. 34, 35, 37 *Continue LA project*
Week 14	Nov. 30	Logistic Regression and Proportional Hazards Regression	Ch. 38 *Finalize LA project*
Week 15	Dec. 7	ANOVA and Presentations	Ch. 39 & 40 *Participate in peer's LA project* *Complete peer- and self-eval* *Complete reflection statement*

Course Materials and Technology

The required textbook for this course is:

Motulsky, H. (2017). *Intuitive biostatistics: a nonmathematical guide to statistical thinking 4th edition*. Oxford University Press, USA. ISBN-13: 978-0190643560

This course will use a website that can be found at http://elearning.ufl.edu to organize and disseminate information. The literature articles used in this course will be available via the course website.

This course will also utilize various websites and applets during in-class activities. Therefore, it is required that students bring a laptop to the Wednesday class sessions.

For technical support for this class, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- https://lss.at.ufl.edu/help.shtml

ACADMIC REQUIREMENTS AND GRADING

Assignments

Here is the breakdown of weekly work expectations:

Prior to class meeting: Students are expected to prepare for the week by completing the reading assignments listed under the upcoming week. Additionally, there may also be one or more short (10 minutes or less) videos to watch that go beyond the information in the textbook. A readiness quiz that covers the basic information from the readings will be due **each Monday by 11:55pm** (unless otherwise specified). Students are encouraged to work together on readiness quizzes, but any text answers **must be in your own words**.

During the week: The class session each week will be devoted to brief reviews of reading material and group activities. One activity each week, which is blended into the lecture, will explore the statistical concepts that are being covered. Students are expected to interact with the activity by participating in class discussions and small group work. The second activity each week will involve reading research literature from the fields of medicine, public health, or other fields tailored to the class participants and applying statistical concepts to evaluate, review, or critique them. Each of you will be expected to submit answers from this activity to a collaborative key located online. Because these activities will be completed in group settings, it is imperative that each student has prepared for class by completing the readings and readiness quiz.

End of the week: An end-of-unit quiz covering ideas from the concept and literature activities of the week, as well as concepts from earlier weeks, will be due **each Friday by 11:55pm.** Students are expected to complete end-of-unit quizzes independently.

Project: Using an article of your choosing from your field, you complete two major assignments to demonstrate your ability to read and interpret statistical results in your scientific field of interest:

1. Article Review: The goal of this assignment is for you to use your knowledge of statistical concepts to critically evaluate the study/article.
2. Literature Project: The goal of this assignment is for you to use your knowledge of statistical concepts to create a teaching/learning product. By doing so, it forces you to summarize, organize, and communicate your understanding of the [statistical topics/methods] [statistical concepts/components/material].

The Project consists of two major assignments, with guidelines throughout the term to ensure your success on them. You have the choice of working individually or small groups to complete the tasks. The culmination of the Project will be sharing your second assignment with your peers during the last week of the semester.

It is recommended that if you work in a group, you use Google Documents (or Apps) to aid collaboration and review.

Grading

Weekly Work (Total: 80%)
Readiness quizzes (20%)
Active and timely participation in class activities and discussions (20%)
End-of-the-Week quizzes (40%)
Project (Total: 20%)
Article Review (deadlines, evaluation of guidelines table and review) (42%)
Literature Project (deadlines, evaluation, Q&A participation) (50%)
Peer & Self Evaluations and Reflection Statement (8%)

Point system used:

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

Policy Related to Make Up Exams or Other Work

This course covers a large amount of material in a short amount of time. The group and class activities depend on the active and timely participation of all students. Therefore, **late assignments or quizzes will not be accepted** without an excused absence.

Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior

All students are expected to participate in class discussions and activities. In order to respectfully engage in group work, cell phones and off-topic use of laptops will not be tolerated. Not only will these distractions interfere with the student's ability to learn, but they will also interfere with the learning of their classmates.

Communications Guidelines

When communicating with classmates or the instructor, especially when using email messages or Canvas discussions, please be courteous and respectful to avoid hindering the learning community established by the course. For information on netiquette guidelines, go to http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

"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.

Online Faculty Course Evaluation Process

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Online Synchronous Sessions

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

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 of accommodations to you, which you must then give to me as the instructor of the course to receive accommodations. Please make sure you provide this letter to me by the end of the second week of the course. 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 an 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

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.

Inclusive Learning Environment

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace The University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." If you have questions or concerns

about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: www.multicultural.ufl.edu.