

**University of Florida**  
**College of Public Health & Health Professions Syllabus**  
**PHC 6075: Biostatistical Literacy (3 credit hours)**

Fall: 2023

Delivery Format: Hybrid

Course Website: <http://elearning.ufl.edu>

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Instructor Name: Steven Foti, PhD  
Room Number: HPNP-1101  
Meeting Times: W-Period 9 (4:05 PM - 4:55 PM)  
Phone Number: 352-294-5922 (office)  
Email Address: [fotisj@ufl.edu](mailto:fotisj@ufl.edu)  
Office Hours: W 11am-1pm in CTRB 5244  
Teaching Assistants: none  
Preferred Course Communications: email, Canvas message

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### **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).

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## **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 synchronous 50-minute session in person. 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.

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## 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 & <i>Project</i>
<b>Week 1</b>	Aug. 23	Syllabus/Introduction	None
<b>Week 2</b>	Aug. 30	Introduction to Biostatistics	Ch. 1, 2, 3 <i>Form project team</i>
<b>Week 3</b>	Sept. 6	Introduction to Survival Data	Ch. 5 <i>Find an Article assignment</i>
<b>Week 4</b>	Sept. 13	Confidence Interval for a Proportion	Ch. 4 <i>Start Guidelines Checklist</i>
<b>Week 5</b>	Sept. 20	Summarizing Continuous Variables	Ch. 7, 9 <i>Finalize Guidelines Checklist</i>
<b>Week 6</b>	Sept. 27	Confidence Interval for a Mean	Ch. 10, 12, 14 <i>None</i>
<b>Week 7</b>	Oct. 4	Hypothesis Testing	Ch. 15, 16, 17, 18, 19 <i>Start working on Article Review</i>
<b>Week 8</b>	Oct. 11	Challenges in Statistics	Ch. 20, 22, 23, 24, 25, 26 <i>Continue Article Review</i>
<b>Week 9</b>	Oct. 18	Statistical Tests, Part 1	Ch. 27, 28 <i>Finalize Article Review</i>
<b>Week 10</b>	Oct. 25	Statistical Tests, Part 2	Ch. 29, 30, 31
<b>Week 11</b>	Nov. 1	Communicating Risk	Ch. 42

	Dates	Topic	Readings & Project
<b>Week 12</b>	Nov. 8	Correlation and Regression	Ch. 32, 33 <i>Start Literature Activity project</i>
<b>Week 13</b>	Nov. 15	Multiple Linear Regression	Ch. 34, 35, 37 <i>Continue LA project</i> <i>Sign up for peer's LA project</i>
<b>Week 14</b>	Nov. 22	Thanksgiving Break	
<b>Week 15</b>	Nov. 29	Logistic Regression and Proportional Hazards Regression	Ch. 38 <i>Finalize LA project</i>
<b>Week 16</b>	Dec. 6	ANOVA	Ch. 39 & 40 <i>Participate in peer's LA project</i> <i>Complete peer- and self-eval</i> <i>Complete reflection statement</i>

### Course Materials and Technology

The required textbook for this course is:

Motulsky, H. (2017). *Intuitive biostatistics: a nonmathematical guide to statistical thinking 4<sup>th</sup> 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](mailto:Learning-support@ufl.edu)
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

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## 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 Wednesday by 3pm** (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%)
- Collaborative Key Contributions (20%)
- End-of-the-Week quizzes (40%)

### Project (Total: 20%)

- Article Review (deadlines, evaluation of guidelines table and review) (9%)
- Literature Project (deadlines, evaluation, Q&A participation) (9%)
- Peer & Self Evaluations and Reflection Statement (2%)

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
GPA	4.00	3.67	3.33	3.00	2.67	2.33	2.00	1.67	1.33	1.00	0.67	0.00

## 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.

## Policy Related to Required Class Attendance

Class attendance is expected. If you are going to miss a class session, please notify the instructor in advance.

Excused absences must be consistent with university policies in the Graduate Catalog (<https://catalog.ufl.edu/graduate/regulations/#text>). Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

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## 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/>.

### Policy Related to Guests Attending Class

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are not permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy: <http://facstaff.php.ufl.edu/services/resourceguide/getstarted.htm>

### **Recording Within the Course**

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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## **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.

- **U 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>
- **University Police Department:** [Visit UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center:** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; [Visit the UF Health Emergency Room and Trauma Center website](#).

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.

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### **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](http://www.multicultural.ufl.edu).