

**University of Florida**  
**Colleges of Public Health & Health Professions and Medicine Syllabus**  
**PHC 6937: Biostatistical Literacy (3 credits)**  
Fall: 2017  
Delivery Format: On-Campus  
Course Website: <http://elearning.ufl.edu>

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Office Hours: R 10am-12pm, or by appointment  
Preferred Course Communications: email or Canvas

Meeting Days: T – 10 (5:10pm – 6pm), R – 10/11 (5:10pm – 7:05pm)  
Meeting Place: T - Communicore C1-3, R – Communicore C1-4

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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.

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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 introduces basic concepts and techniques 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 fundamental concepts of:

- 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 will involve minimal calculation and offers no formal training in statistical software. The focus will be on understanding statistical concepts, when to use a given method, and how to interpret the results. Computations and computer programming used to analyze raw data will not be emphasized.

### **Relation to Program Outcomes**

This is an introductory biostatistics service course for 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.

### **Course Materials and Technology**

The required textbook for this course is:

Motulsky, H. (2014). *Intuitive biostatistics: a nonmathematical guide to statistical thinking*. Oxford University Press, USA. ISBN-13: 978-0199946648

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 Thursday 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>

### **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 groups to conduct a research study to more deeply explore statistical concepts and continue to develop their understanding of what is involved in designing and carrying out a research study.

### Tentative Course Schedule

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

	Dates	Topic	Readings
<b>Week 1</b>	Aug. 22	Introduction to Biostatistics	Ch. 1, 2, 3
	Aug. 24		
<b>Week 2</b>	Aug. 29	Introduction to Survival Data	Ch. 5
	Aug. 31		
<b>Week 3</b>	Sept. 5	Confidence Interval for a Proportion	Ch. 4
	Sept. 7		
<b>Week 4</b>	Sept. 12	Summarizing Continuous Variables	Ch. 7, 9
	Sept. 14		
<b>Week 5</b>	Sept. 19	Confidence Interval for a Mean	Ch. 10, 12, 14
	Sept. 21		
<b>Week 6</b>	Sept. 26	Hypothesis Testing	Ch. 15, 16, 17, 18, 19
	Sept. 28		
<b>Week 7</b>	Oct. 3	Challenges in Statistics	Ch. 20, 22, 23, 24, 25, 26
	Oct. 5		
<b>Week 8</b>	Oct. 10	Statistical Tests, Part 1	Ch. 27, 28
	Oct. 12		
<b>Week 9</b>	Oct. 17	Statistical Tests, Part 2	Ch. 29, 30, 31
	Oct. 19		
<b>Week 10</b>	Oct. 24	Communicating Risk	Ch. 42
	Oct. 26		
<b>Week 11</b>	Oct. 31	Correlation and Regression	Ch. 32, 33
	Nov. 2		
<b>Week 12</b>	Nov. 7	Multiple Linear Regression	Ch. 34, 35, 37
	Nov. 9		
<b>Week 13</b>	Nov. 14	Logistic Regression and Proportional Hazards Regression	Ch. 38
	Nov. 16		
<b>Week 14</b>	Nov. 21	ANOVA and Review	Ch. 39 & 40
	Nov. 23 (No Class)		
<b>Week 15</b>	Nov. 28	Activities/Presentations	
	Nov. 30		
<b>Week 16</b>	Dec.5	Presentations	

### ACADEMIC REQUIREMENTS AND GRADING

#### Assignments

Here is the breakdown of weekly work expectations:

- **Prior to first class of the week:** 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. An online 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.

- **During the week:** The two class sessions each week will be devoted to brief reviews of reading material and group activities. One activity each week will explore the statistical concepts that are being covered. 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. Time will also be allotted each week to meet and work with Island Project groups. 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 online end-of-unit quiz covering 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.
- **The Island Project:** Students will work in groups to design and carry out a medical or public health study to strengthen their understanding of the research process. Instead of collecting “real” data, which is quite time consuming, students will use a simulated world called *The Island* (<http://escholarship.org/uc/item/2q0740hv>). This project will be semester-long and will require students to apply concepts learned in the course at a higher level. At the end of the semester, each group will prepare and present the results of their study to their peers.

#### Weekly Work (Total: 80%)

Readiness quizzes (20%)

Active and timely participation in class activities and discussions (20%)

End-of-the-Week quizzes (40%)

#### Island Project (Total: 20%)

Study Design (6%)

Final study presentation (10%)

Active and timely participation during the Island Project, as determined by peer ratings (2%)

Active and timely participation during the Island Project, as determined by the instructor (2%)

Point system used (i.e., how do course points translate into letter grades).

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

Please be aware that a C- is not an acceptable grade for graduate students. A grade of C counts toward a graduate degree only if an equal number of credits in courses numbered 5000 or higher have been earned with an A. In addition, the Bachelor of Health Science Program does not use C- grades.

You must include the letter grade to grade point conversion table below. Letter grade to grade point conversions are fixed by UF and cannot be changed.

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

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### Attendance and Late Work Policies

Since a large portion of this class involves group interaction and the completion of in-class activities, regular punctual attendance and participation is expected. Repeated tardiness or unexcused absences will result in a reduction of class participation points.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

**Late 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.**

Please note: 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.

### Communication 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/>.

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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 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.

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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)