

Biology 3312 (Biostatistics) Syllabus—Spring 2018

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Class time, Lectures, and Computer Practices:

Tuesdays and Thursdays, 12:30PM to 1:50PM

All the lectures and computer practices are held at Tuttleman Hall RM006.

Usually, every Tuesday we have lectures. On Thursdays we focus on computer practicing and learn using different software, including Microsoft Excel, SPSS, Graphpad/Prism, and R, to perform different statistical analyses. Throughout the semester, using R programming to perform statistical analyses is what we are going to concentrate on.

Office Hours:

Tuesdays and Thursdays 2:30PM to 4:00PM at RM419A BioLife Sciences Building

Textbook and Reference Book:

Intuitive Biostatistics: A Nonmathematical Guide to Statistical Thinking by Harvey Motulsky (4th Ed, ISBN-13: 978-0190643560 ISBN-10: 0190643560)

The 3rd Ed is also good (ISBN13: 978-0199946648 ISBN10: 0199946647).

You may also refer to:

Fundamentals of Biostatistics by Bernard Rosner (7th Ed, ISBN-13: 978-0538733496 ISBN-10: 0538733497)

For the computer practice/lab, a copy of lab manual/notes will be provided to you for free.

Course Description:

General introductory biostatistics for undergraduate students, including lectures covering basic biostatistics, and computer labs practicing how to use Microsoft EXCEL, SPSS, Graphpad/Prism, and R to perform statistical analyses.

Blackboard:

Course announcements and grades will be posted online using Blackboard. Please check Blackboard periodically.

Temple Email:

You may receive important information regarding the course via your Temple email. Please check your Temple email daily. You may ask general questions regarding the course via Temple email. If you have some specific questions and want to see me during the office hours or any other time, please email me via your Temple email to make an appointment and briefly describe your questions.

Assignments, Exams, and Grading:

Throughout this semester, there will be 7 in-class assignments and 2 take-home assignments. You need to use knowledge learned from both the lectures and computer labs/practices to complete these assignments.

Each in-class assignment contributes 2% of the final grade. Each take-home assignment contributes 1.5% of the final grade. The in-class assignments will be teamwork. Each group only submits one copy of the assignment and the group members receive the same grade for that assignment. The take-home assignments have to be done individually.

Each in-class assignment will be announced at the beginning of the computer practicing part of a class and is due at the end of the same class.

The take-home assignments will be announced in lectures and are due in one week thereafter.

There is a quiz for the computer practice/lab. The quiz contributes 3% of the final grade.

There will be 2 midterm exams and a final exam based on the lectures only. The first midterm exam contributes 20% to the final grade. The second midterm exam, which is NOT cumulative, contributes another 20% to the final grade. There is a final exam for the computer practice/lab, which contributes 17% to the final grade. There is also a final exam for the lectures. It is cumulative and contributes 23% to the final grade.

Attendance will be taken into consideration.

Attendance:

The attendance is mandatory. You are expected to come to all the lectures and computer labs/practices, and take all the exams.

Please be on time to avoid missing any exams. There will be NO makeup exams.

If you have a medical or family emergency and cannot come to a lecture, a computer lab, or take an exam, please email me at your earliest convenience (prefer before the class). If you miss a class meeting for any reason, you will be responsible for all materials covered and announcements made in your absence, although I may try to help you to cover the materials during the office hours.

Academic Honesty and Civility:

You must abide by Temple's Code of Conduct (see <http://www.temple.edu/assistance/udc/coc.htm>), which prohibits:

1. Academic dishonesty and impropriety, including plagiarism and academic cheating.
2. Interfering or attempting to interfere with or disrupting the conduct of classes or any other normal or regular activities of the University.”

NO cheating in the exams/quizzes! Being caught cheating will be resulted in being failed.

Disabilities:

Temple University is committed to the inclusion of students with disabilities and provides accessible instruction, including accessible technology and instructional materials.

The process for requesting access and accommodations for this course is: (1) Advise me the need for access or accommodations (should contact me privately to discuss the specific situation as soon as possible); (2) Contact Disability Resources and Services (DRS) at 215-204-1280 or walk in Ritter Annex 100 to request accommodations; (3) DRS will consult with me as needed about essential components of the program and can coordinate reasonable accommodations for students with documented disabilities; (4) Present me with a DRS accommodation letter.

Class Schedule:

Class	Date	Topic	Textbook
1	Jan. 16, 2018 (Tuesday)	Introduction	Chapter 1
2	Jan. 18, 2018 (Thursday)	Computer practice: R & descriptive statistics	Lab note 1
3	Jan. 23, 2018 (Tuesday)	descriptive statistics, variables, quantifying scatter	Chapters 8 & 9
4	Jan. 25, 2018 (Thursday)	Computer practice: descriptive statistics, define functions in R, quantifying scatter	Lab note 2
5	Jan. 30, 2018 (Tuesday)	Samples and population, Confidence interval of a proportion	Chapters 3 & 4
6	Feb. 1, 2018 (Thursday)	Computer practice: CI of a proportion	Lab note 3
7	Feb. 6, 2018 (Tuesday)	Confidence interval of a mean	Chapter 12
8	Feb. 8, 2018 (Thursday)	Computer practice: CI of a mean	Lab note 4
9	Feb. 13, 2018 (Tuesday)	Gaussian distribution & Poisson	Chapter 10

		Distribution	
10	Feb. 15, 2018 (Thursday)	Midterm Exam 1	
11	Feb. 20, 2018 (Tuesday)	Error bars	Chapter 14
12	Feb. 22, 2018 (Thursday)	Computer practice: data frame and plotting figures (I)	Lab note 5
13	Feb. 27, 2018 (Tuesday)	P values	Chapter 15
14	March 1, 2018 (Thursday)	Computer practice: data frame and plotting figures (II)	Lab note 6
	the week of March 4, 2018	Spring Break, No Classes	
15	March 13, 2018 (Tuesday)	Statistical significance, interpretations, and hypothesis testing	Chapters 16, 18, & 19
16	March 15, 2018 (Thursday)	Computer practice: error bars	Lab note 7
17	March 20, 2018 (Tuesday)	Hypothesis tests for comparing two proportions: Fisher's exact test and Chi-squared test	Chapter 27
18	March 22, 2018 (Thursday)	Computer practice: Fisher's exact test and Chi-squared test	Lab note 8
19	March 27, 2018 (Tuesday)	Hypothesis tests for comparing two means: paired and unpaired t-tests	Chapters 23, 24, & 25
20	March 29, 2018 (Thursday)	Midterm Exam 2	
21	April 3, 2018 (Tuesday)	Multiple comparisons: Bonferroni correction & FDR correction	Chapter 22
22	April 5, 2018 (Thursday)	Computer practice: paired and unpaired t-tests; multiple comparisons	Lab note 9
23	April 10, 2018 (Tuesday)	Hypothesis tests for comparing more than two means: One-way and two-way ANOVA test	Chapter 30
24	April 12, 2018 (Thursday)	Computer practice: comparing multiple means	Lab note 10
25	April 17, 2018 (Tuesday)	<i>Post hoc</i> analyses	Chapter 31
26	April 19, 2018 (Thursday)	Computer practice: <i>post hoc</i> analyses	Lab note 11
27	April 24, 2018 (Tuesday)	Sample Size and Key concepts of statistics	Chapters 26, 44, & 45
28	April 26, 2018 (Thursday)	Computer Lab Final	
	May 1, 2018 (Tuesday)	Study Day, No Classes	
29	May 3, 2018 (Thursday)	10:30AM-12:30PM Final Exam	

Note: Monday, January 29 is the last day to add or drop a Full Term 16-week course