BIOM 505-001, Summer 2021

Course Title: Introduction to Biostatistics
Course Number: BIOM 505-001
Course Credits: 2

Instructor: Li Luo, Ph.D.
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     Phone: 505-272-8704
     Office Hours: By appointment
     Location: Zoom Meetings (to be reevaluated if non-virtual meetings are permissible)

Class meetings (Days, Times): Tuesdays and Thursdays: 10-11:50 AM

Course Description:
This course introduces the basic principles and methods of biostatistics, providing students the methodological and computational foundation for conducting statistical analysis for biological and public health related research.

Course Goals:
Students are able to conduct appropriate statistical analysis of their own research data and provide clear interpretations of the analysis results.

Student Learning Outcomes:
- Understand different types of data and describe them via visual displays
- Perform simple and appropriate statistical analysis based on the biological data
- Understand and interpret output from statistical package regarding the estimation procedures and hypothesis tests, and draw subsequent scientific conclusions

Textbook and Reading:
- Required Text: "Biostatistics with R: An Introduction to Statistics Through Biological Data", By Babak Shahbaba (Springer). Link: https://link.springer.com/book/10.1007/978-1-4614-1302-8

- Recommended Text: "Biostatistics: A Foundation for Analysis in the Health Sciences", By Wayne W. Daniel (Wiley Series in Probability and Statistics) 11th edition
- Instructor lecture notes
- R software with Rcmdr package will be used throughout the biostatistical lectures

Course Requirements:
- Students are required to identify and use their own lab datasets for the course final project.

Assessment and Grading:
- Class Attendance -10%
- Homework Assignments- 40%
- Final Project -50%

Students must work on their own homework assignments and final project independently.

Grading scale:

Final grades will be based on the sum of all possible course points as noted above.

Percentage of available points	Grade
90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
< 60	F

Tentative Course Schedule:

Session #	Date	Topics
1	Tuesday, June 8, 2021	Overview, basic concepts, study design
2	Thursday, June 10, 2021	Introduction to probability Probability distributions (Binomial distribution, Poisson distribution, Normal distribution)
3	Tuesday, June 15, 2021	Lab #1. Introduction to R/Rcmdr
4	Thursday, June 17, 2021	Summary statistics and graphical summary
5	Tuesday, June 22, 2021	Statistical inference Populations and samples, standard error of the mean, confidence intervals, central limit theorem
6	Thursday, June 24, 2021	Lab #2
7	Tuesday, June 29, 2021	Hypothesis test with one sample or two samples
8	Thursday, July 1, 2021	Sample size calculation and power analysis
9	Tuesday, July 6, 2021	Hypothesis test with three or more samples Analysis of variance, multiple comparisons
10	Thursday, July 8, 2021	Lab #3
11	Tuesday, July 13, 2021	Correlation and linear regression
12	Thursday, July 15, 2021	Analysis of categorical data: contingency table, Chi-square test and Fisher's exact test
13	Tuesday, July 20, 2021	Logistic regression
14	Thursday, July 22, 2021	Non-parametric tests
15	Tuesday, July 27, 2021	Lab #4
16	Thursday, July 29, 2021	Special topic looking forward Final project due

Accommodation Statement
Accessibility Services (Mesa Vista Hall 2021, 277-3506) provides academic support to students who have disabilities. If you think you need alternative accessible formats for undertaking and completing coursework, you should contact this service right away to assure your needs are met in a timely manner. If you need local assistance in contacting Accessibility Services, see the Bachelor and Graduate Programs office.

Title IX Statement
A Note About Sexual Violence and Sexual Misconduct: As a UNM faculty member, I am required to inform the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu) of any report I receive of gender discrimination which includes sexual harassment, sexual misconduct, and/or sexual violence. You can read the full campus policy regarding sexual misconduct at https://policy.unm.edu/university-policies/2000/2740.html. If you have experienced sexual violence or sexual misconduct, please ask a faculty or staff member for help or contact the LoboRESPECT Advocacy Center.

Academic Integrity
The University of New Mexico believes that academic honesty is a foundational principle for personal and academic development. All University policies regarding academic honesty apply to this course. Academic dishonesty includes, but is not limited to, cheating or copying, plagiarism (claiming credit for the words or works of another from any type of source such as print, Internet or electronic database, or failing to cite the source), fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. The University's full statement on academic honesty and the consequences for failure to comply is available in the University Catalog and in the Pathfinder.

Cell Phones and Technology
As a matter of courtesy, please turn off cell phones, pagers, and other communication and entertainment devices prior to the beginning of class. Notify me in advance if you are monitoring an emergency, for which cell phone ringers should be switched to vibrate.