

Syllabus for BIOM 505 (section 006) Biostatistical Methods II (Spring 2018)

Instructor : Dr. Fares Qeadan

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Class Meeting Times: T 9:30 am - 10:45 am, HSCL 428 (North Campus)
R 9:30 am - 10:45 am, HSCL 428 (North Campus)
Office Hours: F 09:00 am - 12:00 pm or by an appointment

TA : Yuridia Leyva (Office Hours: TBA)

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Prerequisites : Biostatistics Methods I or its equivalent.

Text :

- Applied Medical Statistics Using SAS. By Geoff Der and Brian S. Everitt; CRC Press.
- Fundamentals of Biostatistics. By Rosner; 7th Edition.

Course Objectives : The main objective of this course is to (a) Introduce intermediate biostatistical techniques and apply critical thinking to analyze public health data, (b) Access, evaluate and communicate statistical information, (c) Apply ethical guidelines for statistical practice and (d) Identify sampling and research methods for public health. Further, students in this course will gain experience in numerous statistical methods often used in health research, including software implementation. By the end of this course, students will be able to:

- Understand the fundamental concepts statistical modeling and prediction.
- Implement and interpret regression (linear and logistic), ANOVA and Survival analyses.
- Conduct non-parametric statistical methods.

- Conduct biomarkers statistical analysis.
- Do sample size calculations and power analysis.
- Make inference about populations from samples using regression, ANOVA and survival analyses.
- Determine appropriate statistical methods to use in a given situation.
- Use SAS to conduct intermediate Biostatistical analyses.

Course Description : This course will cover statistical methods used in the medical sciences including:

- Linear Regression.
- Analysis of Variance (ANOVA) and Covariance (ANCOVA).
- Logistic Regression.
- Survival Analysis.
- Non-parametric statistical methods.
- Sample Size Calculation
- Biomarkers statistical analysis

Software : In this course we will be using SAS 9.4 but the use of any other statistical software, except EXCEL, is acceptable. In class, support will be provided for SAS only.

Quizzes : There will be no quizzes in this course.

Mid-Term Exam (25%) : There will be one mid-term exam. The exam consists of a power point presentation about the final project contents and progress. The tentative schedule of the exam is Tuesday and Thursday, March 27 and 29. This presentation will be a progress report on your final research project. You should share your presentation with me before the presentation due date for feedback and suggestions.

Homework (30%) : Homework will be assigned every 2-3 weeks and collected in class on the scheduled date as listed below in the course schedule. Late homework will not be accepted (unless it is the result of an officially excused absence). Homework assignments will mostly consist of written questions. We will have 4 homeworks through the semester. There is no negative points for wrong answers. Note that all assignments must be typed. Grades for late homeworks will be reduced by 25% for each day that the homework is late with the understanding that the late homework policy is valid only for up to two days.

Take Home Project (30%) : You will be expected to finish this course by writing and academic paper (almost ready for publication), which demonstrates a comprehensive knowledge of

some aspect of statistical modeling, in a take home project. You may not work work in groups. In this task, you will identify the importance of working collaboratively with diverse researchers (your peers) and interact sensitively, effectively, and professionally with persons from diverse demographic, cultural, socioeconomic, educational, and professional backgrounds and lifestyles. The Take Home Project is due on Thursday May 3rd, 2018 by 5 pm. You can decide on the data source for your final project. Students should have their final decision regarding the data they plan to use by Feb. 8th 2018.

Final Exam (10%) : There will be a final exam. The exam consists of a poster presentation about the final project. The tentative schedule of the final exam is Thursday, May 3rd. Faculties and investigators from the departments of Biomedical Sciences, Family and Community Medicine, Internal Medicine, and many others will be invited to join the posters session. Judges/reviewers will recognize the best presentation from the poster session. Funds for printing the posters will be available.

Attendance & Participation (5%) : You are expected to attend all classes. If you have three or more unexcused absences you may be dropped from the course (which may result in a W for the course). Please note that it is your responsibility to drop the course if you decide to stop attending classes. If you don't you will receive an F.

Grades : Your grade will be based on the following scale:

A+ = [97 - 102]
A = [93 - 97)
A- = [90 - 93)
B+ = [87 - 90)
B = [83 - 87)
B- = [80 - 83)
C+ = [77 - 80)
C = [73 - 77)
C- = [70 - 73)
D+ = [67 - 70)
D = [63 - 67)
D- = [60 - 63)
F = [00 - 60)

UNM Policy on Academic Dishonesty : Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course. Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in

filling out applications or other University records.

Students with Special Needs : Students with newly or previously diagnosed disabilities who need accommodations for learning and/or testing will compile, submit, and maintain their documentation through the Accessibility Resources Center on Main Campus. Additional information for School of Medicine students is also available in the School of Medicine Counseling and Psychotherapy Guide.

All students should inform their professors as soon as possible so they can help implement the accommodations. More information about the disability policy for all students is available from the UNM Accessibility Resource Center at <http://arc.unm.edu/requirements.html>.

Important Dates :

- Jan 26, Friday Last day to ADD sections and CHANGE credit hours on LoboWEB
- Feb 2, Friday Last day to DROP without "W" grade and 100% tuition refund on LoboWeb.
- March 11-18, Spring Break
- April 13, Friday Last day to DROP without Dean's Permission on LoboWEB.
- May 4, Friday Last Day for CHANGE grade mode with form.
- May 12, Saturday Last day of instruction
- May 7-11, Final Exams

Policies : The instructor reserves the right to make any changes he considers academically advisable. Changes will be announced in class. It is your responsibility to keep up with any changed policies and therefore:

- You are responsible for the material covered in class including any changes in the course schedule and syllabus.
- Make up exams will only be given when you have a verifiable excuse. Please note, make up exams will not be the same as the original exam and may be considered more challenging.
- Students are expected to behave in a courteous and respectful manner towards the instructor and their fellow students; this helps create a positive and supportive learning atmosphere in the classroom. Please be on time for your lectures; turn off your cell phone; and refrain from activity that could be disruptive to the class.

Course Schedule: : Tentative Course Outline

Date	Topic	Reading
T 01/16	Review of Biostatistics I	Ch. 1-2
R 01/18	Non-parametric Methods	Handout
T 01/23	Non-parametric Methods (continued)	Handout
R 01/25	Simple Linear Regression	Ch. 7
T 01/30	Simple Linear Regression (continued)	Ch. 7
R 02/01	Multiple Linear Regression	Ch. 8
T 02/06	Multiple Linear Regression (continued)	Ch. 8
R 02/08	Multiple Linear Regression (continued)	Ch. 8
T 02/13	Multiple Linear Regression (continued) HW1 DUE	Ch. 8
R 02/15	Multiple Linear Regression (continued)	Ch. 8
T 02/20	ANOVA	Ch. 6
R 02/22	ANOVA (continued)	Ch. 6
T 02/27	ANOVA (continued)	Ch. 6
R 03/01	ANOVA (continued)	Ch. 6
T 03/06	Simple Logistic Regression HW2 DUE	Ch. 9
R 03/08	Simple Logistic Regression (continued)	Ch. 9
T 03/13	SPRING BREAK	NO CLASS
R 03/15	SPRING BREAK	NO CLASS
T 03/20	Multiple Logistic Regression	Ch. 9
R 03/22	Multiple Logistic Regression (continued)	Ch. 9
T 03/27	EXAM: PRESENTATIONS	
R 03/29	EXAM: PRESENTATIONS (continued)	
T 04/03	Survival Analysis HW3 DUE	Ch. 15
R 04/05	Survival Analysis (continued)	Ch. 15
T 04/10	Survival Analysis (continued)	Ch. 15
R 04/12	Survival Analysis (continued) HW4 DUE	Ch. 16
T 04/17	Survival Analysis (continued)	Ch. 16
R 04/19	Sample Size Calculation	Ch. 4
T 04/24	Sample Size Calculation	Ch. 4
R 04/26	Biomarkers Statistical Analysis	Handout
T 05/01	Biomarkers Statistical Analysis	Handout
R 05/03	Final Project and Posters session Due	
T 05/08	Finals Week	NO CLASS
R 05/10	Finals Week	NO CLASS