UNM | SCHOOL of MEDICINE
Family & Community Medicine

Syllabus for PH 538 (section 004)
Public Health Biostatistical Methods I
(Fall 2016)

Instructor : Dr. Fares Qeadan

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Web Page:	http://www.mathalpha.com/teaching.html
Class Meeting Times:	T 9:30 am - 10:45 am, Domenici Ctr for Health Sci Ed B116
	R 9:30 am - 10:45 am, Dane Smith Hall 141
Office Hours:	F 09:00 am - 12:00 pm or by an appointment (MRF Conference Room)
TA Office Hours:	T 11:00 am - 12:00 pm (MRF Conference Room)

TAs :

Yuridia Leyva: YLeyva@salud.unm.edu
Thais Schwartz: thayrm@gmail.com

Prerequisites : College algebra. No prior knowledge of probability and statistics is assumed.

Text :

- Mandatory textbook: A Gentle Introduction to Stata, 5th Edition (ISBN-10: 1597181854).
- Optional textbook: Principles of Biostatistics, 2nd Edition (includes CD-ROM) by Marcello Pagano from Harvard School of Public Health.

Online Resources :

- http://bolt.mph.ufl.edu/6050-6052/
- https://oli.cmu.edu/jcourse/webui/guest/join.do?section=statreasoning

Course Objectives : The main objective of this course is to (a) Introduce basic 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 of probability and statistics.
- Implement and interpret graphical and numerical descriptive statistics.
- Implement and interpret basic inferential statistics.
- Determine appropriate statistical methods to use in a given situation.
- Use STATA (or any other statistical software) to conduct simple statistical analyses.

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

- Graphical and Numerical Descriptive Statistics.
- Probability calculations and distributions with emphasis on the binomial(discrete) and normal (continuous) distributions.
- Inferential Statistics: Point Estimation, Interval Estimation and Hypothesis Testing.
- Nonparametric statistical methods.
- Sample Size Calculation [if time permits].

Software : In this course we will be using STATA 14 but the use of any other statistical software, except EXCEL, is acceptable. In class, support will be provided for STATA only. Stata/IC is available for $75 (six-month license) or $125 (annual license) at: http://www.stata.com/order/new/edu/gradplans/student-pricing/.

Exams (25%) : There will be one mid-term exam. The tentative schedule of the exam is Thursday, October 20 (proctored by the TA).

Homework (35%) : 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 7 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 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 (35%) : You will be expected to finish this course by solving some problems, that demonstrate a comprehensive knowledge of some aspect of Statistics and Probability, in a take home project. You may work in groups with the caveat that a group of 2 or 3, should produce the work of 2 or 3. The upper limit on a group is 3 people. 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 December 15, 2016 in class time.

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.

Extra Credit (2%) : You may earn up to 2% extra credit by completing a report about a well-known statistician or probabilist (please see extra credit handout) which is due on Thursday December 15, 2016 in class time.

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

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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)
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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. Students who think that they may need such accommodations should first contact Dr. Cheri Koinis, PhD, who advises students and coordinates these services for the Health Sciences Center. She will guide students through the process of acquiring services and suggesting relevant accommodation formats. Please contact her directly at 505-272-3839 or at ckoinis@salud.unm.edu. Additional information

for School of Medicine students is also available in the School of Medicine Counseling and Psychotherapy Guide at http://fcm.unm.edu/education/physician-assistant-program/docs/Psychotherapy_Guide_2014.pdf.

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 :

- September 2, Friday Last day to add courses or change sections
- September 5, Monday Labor Day Holiday
- September 9, Friday Last day to drop a course without a grade
- October 13-14, Thursday-Friday Fall Break
- November 11, Friday Last day to withdraw without approval of college dean
- November 24 - November 25, Thursday-Friday Thanksgiving Holiday
- December 9, Saturday Last day of instruction
- December 12-17, Monday-Saturday Final examination period

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 8/23	Introduction	Unit 1 (FL & CM)
R 8/25	Descriptive Statistics	Unit 1 (FL & CM)
T 8/30	Descriptive Statistics (continued)	Unit 1 (FL & CM)
R 9/01	Intro to STATA	
T 9/06	Descriptive Statistics (continued)	Unit 1 (FL & CM)
R 9/08	Sampling Methods	Unit 2 (FL & CM)
T 9/13	Probability	Unit 3A (FL) & M5 (CM)
R 9/15	Probability (continued) **HW1**	Unit 3A (FL) & M5 (CM)
T 9/20	Binomial Distribution	Unit 3B (FL) & M5 (CM)
R 9/22	Binomial & Normal Distributions	Unit 3B (FL) & M6 (CM)
T 9/27	Normal Distribution	Unit 3B (FL) & M6 (CM)
R 9/29	Sampling Distributions, CLT	Unit 3B (FL) & M7 (CM)
T 10/04	Inferential Statistics (Point & Interval estimation)	Unit 4A (FL) & M8-9 (CM)
R 10/06	Point, Interval estimation for means/proportions **HW2**	Unit 4A (FL) & M8-9 (CM)
T 10/11	Point and Interval estimation for means (continued)	Unit 4A (FL) & M8-9 (CM)
R 10/13	Fall break	NO CLASS
T 10/18	**Exam Review**	
R 10/20	**Exam**	Proctored by TA
T 10/25	Hyp. Testing for one population mean/proportion **HW3**	Unit 4A (FL) & M10 (CM)
R 10/27	(continued)	Unit 4A (FL) & M10 (CM)
T 11/01	Hyp. Testing about two Population Proportions	Unit 4A (FL) & M10 (CM)
R 11/03	Hyp. Testing about two Population Means	Unit 4A (FL) & M10 (CM)
T 11/08	Hyp. Testing for Normality	
R 11/10	Chi-square, Fisher's exact, and McNemar's tests	Unit 4B (FL) & M11-12 (CM)
T 11/15	(continued)	Unit 4B (FL) & M11-12 (CM)
R 11/17	Hyp. tests for one and two populations' variances **HW4**	Unit 4B (FL) & M11-12 (CM)
T 11/22	Nonparametric methods	
R 11/24	Thanksgiving	NO CLASS
T 11/29	Nonparametric methods (continued)	
R 12/01	Nonparametric methods (continued)	
T 12/06	Sample Size Calculation **HW5**	
R 12/08	Sample Size Calculation (continued)	
T 12/13	Finals Week	NO CLASS
R 12/15	**Final Project Due**	