Principles of Statistical Inference
HBEH 601 – Fall 2016

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Class Hours: Tuesdays and Thursdays, 9:30-10:45
Class Location: McGavran-Greenberg Hall Rm 2306

Office Hours: Dr. Boynton: Wednesdays, 1:00-2:00 PM and by appointment (Rosenau 309)
                         Rebeccah: Mondays, 3:15-5:15 PM (McGavran-Greenburg 1302)
                         Deshira: Tuesdays, 11:00 AM-12:00 PM (Atrium)

Course Objectives

The purpose of this course is to teach you the fundamental knowledge and skills required to manage datasets and conduct basic statistical analyses. In other words, if someone someday hands you a dataset and asks you to conduct some analyses, the skills that you learn in this course will hopefully keep you from breaking out into a cold sweat and calling in sick the next day. In addition to giving you real world stats skills and a better understanding of health behavior science, the content of this course is also designed to help you pass comps. We will employ SAS as the primary data analysis program.

Required Course Materials

Field, A. & Miles J. (2010). *Discovering Statistics Using SAS*, London, UK: Sage Publications Ltd.

SAS software, Cary, NC: SAS Institute. (You are not required to purchase this software, but you will need to have access to it outside of class. One means of access is through UNC's ITS Virtual Lab: http://help.unc.edu/help/how-do-i-log-on-to-virtual-lab/)

Optional Supplementary Texts

Delwiche, L. D. & Slaughter, S. J. (2003). *The Little SAS Book: A Primer* (5th ed.), Cary, NC: SAS Press.

Huff, D. & Geis, I. (1954; reissued in 1993). *How to Lie with Statistics*, W.W. Norton & Co., New York, NY

Salsburg, D. (2001). *The Lady Tasting Tea: How Statistics Revolutionized Science in the Twentieth Century*, Henry Holt & Co., New York, NY.

Wheelan, C. (2010). *Naked Statistics: Stripping the Dread from the Data*, W.W. Norton & Co., New York, NY.

Coursework

Readings. Most lectures are paired with a short reading assignment, which is usually a section from the assigned textbook. Readings are listed at the back of the syllabus in the course schedule. Completion of the readings is essential to comprehension of the class lecture and discussion.

Non-cumulative Exams. There will be five non-cumulative exams administered during the semester. Each non-cumulative exam consists of two sections:

> **Take home portion of the exam (50%)**: This portion will require that you conduct a series of data analyses using SAS. Each take home portion of an exam is open book and open note; however, as this is an exam, we ask that you complete it without help from anyone other than the course TAs. While completing the take home portion, you may contact the TAs for assistance with question interpretation. The take home portion is due on the date and time of the associated in-class portion of the exam.

> **In class portion of the exam (50%)**: This portion will focus on conceptual elements covered in class and the readings, especially as related to critically consuming and interpreting scientific health behavior research results. In-class portions of exams must be completed at the time of their administration.

IMPORTANT NOTE: Exams cannot be made up under any circumstances. At the end of the semester the lowest of your exam grades will be dropped.

Cumulative Final Exam. There will be a cumulative final exam, administered on the date and time scheduled by the university. The final exam will require you to statistically and substantively interpret a series of research study findings as well as answer one or more general knowledge questions.

Course Grades

Grades will be calculated based on the following distribution:

Course exams (4@ 18% each)	72%
Final Exam	28%
Begging and pleading	0%

Grade	%	Vernacular Interpretation
High pass (H)	92-100	You rocked it.
Pass (P)	80-91	You did respectably well.
Low pass (LP)	70-79	You survived.
Fail (F)	≤ 69	You get to take HBEH 601 again.

Course Rules

Ethics. Academic dishonesty is the act of taking someone else's work or ideas and presenting them as your own, and can be deliberate or the result of carelessness. You will be held responsible for academic dishonesty regardless of whether or not you "meant" to do it. Any form of academic dishonesty in this course will result in a failing grade for the quiz/exam, failing grade for the course, and/or suspension from the University.

Etiquette. Please refrain from doing non-course-related digital activities during lecture (including and ESPECIALLY cell phone texting and hunting for Pokémon Go figures). Please, no alcohol, drug, or tobacco use during class; this includes non-combustible tobacco products such as chew, dip, and e-cigarettes. Also, please no weapons in class, except for your razor sharp wit.

Course Rules (cont.)

Grade Changes: Grade changes will only be made if there was a computational error for an exam score or if an exam re-grade results in a higher score. All requests for exam re-grades must be made in writing to the course instructor and within one week after an exam is returned. In your request, please note your specific reason for requesting the re-grade. After I review the written request, I will re-grade the entire exam. When requesting a regrade, please be aware that an exam score can increase *or decrease*, depending on my assessment of the work. All exam re-grade scores are considered final.

Health Resources

Medical health and professional counseling services are available both on and off campus. Listed below are the on-campus resources for mental health, physical health, and academic issues:

University Counseling and Mental Health Services (CAPS)

https://campushealth.unc.edu/services/counseling-and-psychological-services

First time visits to CAPS are done on a walk in basis, which means ***no appointment is needed if you decide that you would like to initiate mental health services at CAPS***. Hours (including walk-ins) are:

> 9:00 am - 12:00 pm or 1:00 pm - 4:00 pm Monday-Thursday
> 9:30 am - 12:00 pm or 1:00 pm - 4:00 pm Fridays.

UNC Campus Health Services: https://campushealth.unc.edu/

Hours: https://campushealth.unc.edu/about-us/hours

Monday 8:00 a.m. through Saturday 4:00 p.m. and Sunday 8:00 a.m. to 4:00 p.m.

Dean of Students Office: https://deanofstudents.unc.edu/carereport (919) 966-4042

HINTS FOR SUCCESS IN THIS COURSE

BE HERE! There is no substitute for attending class. We will be covering a great deal of material in a short amount of time. Reading your book or glancing at someone else's notes is generally not a sufficient replacement for coming to and participating in class. **There will be regular exams that cannot be made up under any circumstances.** You are allowed to drop your worst exam grade. Please budget this freebie wisely.

LET ME KNOW WHAT'S GOING ON! I cannot help you if you do not let me know there is a problem. For instance, if you have a learning disability or significant medical problem I encourage you to let me know so that I can accommodate your needs. Furthermore, if there is a serious family or personal situation that you think will affect your performance in class, let me know and I will try my best (within reason) to work something out with you. I will be maintaining regular office hours. Please feel free to stop by or to make an appointment to see me.

WORK HARD & HAVE FUN! I'm here to introduce the fascinating (and highly employable!) topic of statistics, not to make your life a morass of misery and despair. If you show up and make an honest effort to participate and learn, there is a good probability that you will do quite well and possibly even enjoy yourself.

HBEH 601 – Fall 2016
Course Schedule*

Week	Date	Topic	Chapter	Exams
Week 1	Tu, Aug 23	Course Overview	-----	
Week 1	Th, Aug 25	Statistics & Research Questions	Chapter 1.1-1.5.1.2	
Week 2	Tu, Aug 30	Descriptive Statistics I	Chapter 1.7-1.7.5	
Week 2	Th, Sep 1	Descriptive Statistics II		
Week 3	Tu, Sep 6	Descriptive Statistics III		
Week 3	Th, Sep 8	Probability I		
Week 4	Tu, Sep13	Probability II		
Week 4	Th, Sep 15	Model Fit & Confidence Intervals	Chapter 2.1-2.5.2.4	Exam 1
Week 5	Tu, Sep 20	Testing Research Questions	Chapter 2.6-2.65	
Week 5	Th, Sep 22	Learning SAS I	Chapter 3	
Week 6	Tu, Sep 27	Learning SAS II	Chapter 4	
Week 6	Th, Sep 29	Model Assumptions I	Chapter 5.1-5.4.3.2	Exam 2
Week 7	Tu, Oct 4	Model Assumptions II	Chapter 5.5-5.7.2.2	
Week 7	Th, Oct 6	Correlation I	Chapter 6.1-6.5.2.3	
Week 8	Tu, Oct 11	*University Day Ceremony* **NO MORNING CLASSES**		
Week 8	Th, Oct 13	Correlation II	Chapter 6.5.3-6.9	
Week 9	Tu, Oct 18	Ethical Statistics		Exam 3
Week 9	Th, Oct 20	*Fall Break* **NO CLASSES**		
Week 10	Tu, Oct 25	20th Century Historical Statistics		
Week 10	Th, Oct 27	Linear Regression I	Chapter 7.1-7.4.3	
Week 11	Tu, Nov 1	Linear Regression II	Chapter 7.5-7.6.2.4	
Week 11	Th, Nov 3	Linear Regression III	Chapter 7.7-7.11.2	
Week 12	Tu, Nov 8	Logistic Regression I	Chapter 8.1-8.4.3	Exam 4
Week 12	Th, Nov 10	Logistic Regression II	Chapter 8.5-8.7	
Week 13	Tu, Nov 15	Logistic Regression III	Chapter 8.8-8.9.4	
Week 13	Th, Nov 17	T-test I	Chapter 9.1-9.4.7	Exam 5
Week 14	Tu, Nov 22	T-test II	Chapter 9.5-9.8	
Week 14	Th, Nov 24	*Thanksgiving* **NO CLASSES**		
Week 15	Tu, Nov 29	ANOVA I	Chapter 10.1-10.2.11.1	
Week 15	Th, Dec 1	ANOVA II	Chapter 10.3.1-10.7	
Week 16	Tu, Dec 6	Last Day of Class a.k.a. reflections and cheesecake		Final

FINAL EXAM – Tuesday, Dec 13, 2016, 8:00 AM – Location TBA

* The course schedule is subject to change. Any changes will be communicated in class and by email.