Applied Occupational Biostatistics

OEHS 6000-001 (Hybrid)

Course Directors: Joseph A. Allen, PhD
joseph.a.allen@utah.edu
Preferred Communication: Email me directly

Office Hours: Dr. Allen: Tuesday from 1:00 to 2:00 or by appointment

Required Readings: Fundamentals of Biostatistics 6th Edition by Bernard Rosner
ISBN-13: 978-0534418205
ISBN-10: 0534418201

Recommended Readings: Learning SAS by Example: A Programmer's Guide by Ron Cody
ISBN-13: 978-1599941653
ISBN-10: 1599941651

Course Meeting Time: Lectures: Recorded Online
SAS Demonstrations: Recorded Online
In-person Lab Time Thursday 3:00 pm - 3:50 pm

Overview

Course OEHS 6000
Department oehs.utah.edu (Links to an external site.)
Pre-Requisites N/A
Credit Hours 3
Location 250 E 200 S, Suite 100 Auditorium
In-person Lab Time Thursday 3:00 pm - 3:50 pm

Description, Goals, Objectives

This is a survey course of basic and applied statistics with an emphasis on biological and exposure related phenomenon. In other words, it's a course about stats that uses occupational and environmental health examples to communicate basic and applied stats.

This course provides a learning opportunity for students to help them become comfortable and competent with both data analysis and interpretation, allowing them to be both good consumers and communicators of data and statistics.

At the end of this course, students will be able to:

- Process data using the statistical procedures taught in the class
- Feel confident in their ability to run stats, but more importantly to interpret data and statistical analyses
- Run stats on data provided to them, interpret those results, and communicate them effectively to a non-academic audience

Applied Occupational Biostatistics

Grading Requirements:

Deliverable	Points
Quizzes	20 (10x)
Demos & forums	10 (10x)
Midterm • Analysis (50) • Exam (100)	150
Final • Analysis (50) • Exam (100)	150
Total	**600**

Quizzes are done online and cover the previous material covered since the prior lecture. They are open book/note and have a time limit. Late submissions will not be accepted. Students are not allowed to retake any quizzes.

Demos and forums are done online. They include viewing the SAS demonstration, performing the analysis after watching the demonstration, and either asking questions for help on the forum from peers and/or providing responses to peers questions. Students must participate each week in the forum in order to receive credit for the demos and demos serve as preparation for the midterm/final where analysis in SAS is required.

Comprehensive Midterm and Final examinations will be comprised of 2 separate elements. One will be an analysis part, where you apply what we learned from the demos to your own data set. You will be given a dataset and specific analyses to run, based on the content of the class. You are to work independently, and each of you will have your own unique dataset. You will be required to hand in electronic copies of your code, log, and output from the statistical program. The second portion will be a timed online exam on the dates indicated below. These exams are closed book/notes and you may only use a simple calculator, no programmable calculators.

Grading criteria for this course as follows:

100% - 92%	A
92% - 90%	A-
90% - 88%	B+
88% - 82%	B
82% - 80%	B-
80% - 78%	C+
78% - 72%	C
72% - 70%	C-
Below 70%	D

Applied Occupational Biostatistics

Lecture Schedule: These are recommended order for watching video lectures, reading materials, and discussions. Quizzes will be available that week and are timed.

Topic	Chapter	Module	Demos and Forums	Quizzes and Exams
Introduction and Overview of Biostatistics		1	1: Introduction to SAS	
Types of Data, Measures of Central Tendency, Probability, Sensitivity and Specificity, Rater Reliability	1, 2, 3	2	2: Data Management	**Quiz 1 Due**
Distributions, Skewness, and Kurtosis	4, 5	3	3: Descriptive Statistics	**Quiz 2 Due**
Central Limit Theorem and Sampling	6	4	4: Summary Counts	**Quiz 3 Due**
Statistical Testing Part I- Hypothesis testing, p-value, t-test, equivalency testing	7, 8	5	5: Statistical Tests 1	
Statistical Testing Part II- Wilcoxon, Chi-Squared Test, Fischer's Exact Test	9, 10	6	5: Statistical Tests 1	**Quiz 4 Due**
Midterm Exam Canvas		7		**MIDTERM**
Correlations and Linear Regression	11	8	6: Statistical Tests 2	**Quiz 5 Due**
Linear Regression cont., and ANOVA	11, 12	9	6: Statistical Tests 2	**Quiz 6 Due**
Effect Modification or Interactions	13	10	6: Statistical Tests 2	**Quiz 7 Due**
Logistic Regression	13	11	6: Statistical Tests 2	**Quiz 8 Due**
Nested Models	13	12	6: Statistical Tests 2	**Quiz 9 Due**
Survival Analysis	14	13	6: Statistical Tests 2	**Quiz 10 Due**
Creating an Analytical Plan, Best Practices for Biostatistics		14		
Cumulative Final Examination Canvas		15		**FINAL EXAM**

Course Evaluation

Evaluation methods include participation in discussions, quizzes, and graded examinations. Dismissal from a course and/or the college can result from unprofessional behavior. Final letter grades for the course will be based on the rubric in the Student Handbook.

Americans with Disabilities Act

The Americans with Disabilities Act. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for DisabilityServices,162OlpinUnion Building,(801) 581-5020.CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services

Addressing Sexual Misconduct

Addressing Sexual Misconduct. Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a

disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, SSB 328,801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Campus Safety

The University of Utah values the safety of all campus community members. To report suspicious activity, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

University of Utah Academic Code of Conduct

All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.

I have elected to use a plagiarism detection service in this course, in which case you will be required to submit your paper to such a service as part of your assignment.

Online Guidelines

There are unique responsibilities that come with taking a course having an online component.

Electronic or equipment failure: It is your responsibility to maintain your computer and other equipment needed to participate in online forums in a manner that enhances your experience. Equipment failures will not be an acceptable excuse for late or absent assignments or quizzes.

Classroom equivalency: Online communications, including e-mail, discussion threads, and chat rooms are equivalent to the classroom and are subject to the Student Code. Specifically:

- Posting photos or comments that would be off-topic in a classroom are still off-topic in a discussion thread.
- Off-color language is never appropriate.
- Using angry or abusive language is called "flaming", and is not acceptable.
- Do not use ALL CAPS, except for titles, since it is the equivalent of shouting online, as is overuse of certain punctuation marks such as exclamation points !!!! and question marks ?????.

- Online communications, including e-mail in Canvas, are University property and subject to GRAMA regulations. Privacy regarding Canvas communications must not be assumed unless mutually agreed upon in advance.
- As with assignments, instructors are required to respond to e-mails in a "reasonable" amount of time. Use the e-mail address posted in this syllabus as the preferred means of communication. Note that content may be shared with the class when there are valid teaching/learning reasons for doing so and mutual privacy agreements for the communications have not been previously made.