University of the Pacific — HLTH 180

Clinical Epidemiology

Spring, 2025   **CRN: 31068**   **Syllabus**

Professor:	Courtney Jensen, Ph.D.
Graduate Assistant:	Addisen Azevedo
Class Location:	WPC 131
Class Days:	Mondays, Wednesdays, Fridays
Class Times:	9:30am – 10:45am
Office Location:	Main Gym, Office 209
Office Hours:	Courtney: MW from 11:00am – 12:15pm
	Location: DUC fireside
	Addisen: M from 11:00am – 12:00pm
	Location: GA Office or DUC fireside
	Other hours available by zoom

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Course Contents:

1. <u>Purpose and Description of the Course</u>

H L T H 1 8 0 is an introduction to the principles and practice of epidemiology for students majoring in any aspect of health. It explores the history, concepts, and methods of epidemiologic investigation. *History:* This part is a) more important than people think it is,   and b) less boring than people think it is. *Concepts:* A major focus of this course is medical epidemiology. What tools are used to assess and advance medicine and patient care in the 21st century? We'll figure that out.   *Methods:* The statistical models taught in this class include bivariate correlation, chi-square test, t-test, several types of regression, and several types of analysis of variance (ANOVA).

Throughout the semester, you'll learn how to collect data, organize it, analyze it, and make sense of those analyses. And you'll learn how to make sense of *other* people's analyses. That may be the most important part: critically evaluating published reports on any subject. To be a thinking person, you have to distrust (or at least doubt) *all* information, scrutinize its methods, and draw your own (appropriate, unbiased) conclusions. We'll get there.

By the end of the semester, you'll have learned to develop research designs that employ the statistical methods described above, and you'll be able to conduct them to evaluate patient care, quantify risk, and understand the patterns of illness and disease in populations.

Prerequisites: There are no prerequisites for this course. *But*: If your transcript has a statistics class on it, you'll have a head start on your peers. A background in stats is helpful.

NOTE: This class is a prerequisite for all epidemiology internships both at national hospitals (focused on emergency medicine, trauma care, or obstetrics), and international government agencies (e.g., Uganda Bureau of Statistics, which requires travel to Kampala, Uganda). This class is also a prerequisite to conduct, present, and publish research with HES faculty. You have to get at least a B+ to be eligible to do any of those things.

2. <u>Very Useful Materials</u>
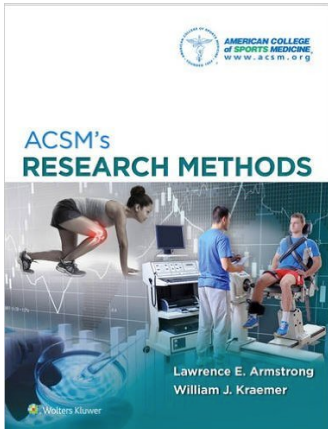
Suggested *(but not required)* ***text:***

Armstrong LE & Kraemer WJ. (2015). *ACSM's Research Methods*. LWW/Wolters Kluwer, United States.

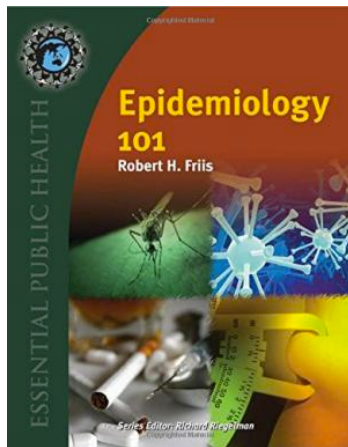If you're going to get it, just go online, e.g., *Amazon*: https://www.amazon.com/ACSMs-Research-Methods-none-ACSM/dp/145119174X

If you're going to buy it (which I do recommend; it's just not necessary); get it wherever it's cheapest.

Suggested *(but not required)* ***text:***

Frills RH. (2009 or 2017). *Epidemiology 101*. Jones & Bartlett Learning, United States.

If you're going to get it, just go online, e.g., *Amazon:*

https://www.amazon.com/s?k=epidemiology+101&i=stripbooks&ref=nb_sb_noss_2

Same as above. It's not a terrible idea to own a copy. Or steal a classmate's while he or she is peeing in the next room (hopefully the next room is a bathroom). Getting it *somehow* will be helpful. Not critical. Just helpful. All other readings will be available in PDF form on Canvas.

3. canvas BY INSTRUCTURE and ZOOM and EpiStatistics.com

Students are required to use the Canvas website (https://pacific.instructure.com/). Lecture materials will be maintained there. And any announcements will be made there. If you're not familiar with Canvas, it's a good idea to do some familiarizing. I don't do anything all that fancy on it, but the posts I do make are important. We may have some Zoom commitments. And all resources you need for the semester are at https://epistatistics.com.

← → C ⌂ 🔒 https://pacific.instructure.com/courses/ ☆
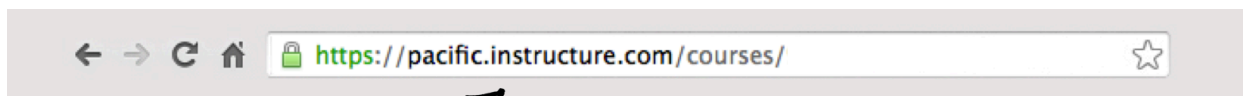
This is where you go.

4. Tests, Quizzes, and Assignments

Exams: 3 *(100 points each)*   *300 points*   Individual
Quizzes: 35 *(5 points each)*   *175 points*   Individual
Poster Presentation Video: 1 *(100 points)*   *100 points*   Group
Labs: 4 *(20 points each)*   *80 points*   Group or Individual
Take-Home Test: 2 *(10 points each)*   *20 points*   Group or Individual
CITI Certification: 1 *(10 points)*   *10 points*   Individual
Happiness Is You!: *(15 points)*   *15 points*   Free

Total for the entire semester: *700 points*

5. Grading Scale and Policy

Final grades are determined by calculating accumulated points from everything and dividing that number by the total points possible (400).

Letter Grade	Points	Percent
Yay!	651+	93%
A-	630–650	90%
B+	609–629	87%
B	581–608	83%
B-	560–580	80%
C+	539–559	77%
C	511–538	73%
C-	490–510	70%
D+	469–489	67%
D	420–468	60%
Sorry.	0–419	<60%

6. Grade Indicator

A, A-   Quality of work indicates full mastery of the subject; a solid A (no minus) signifies extraordinary distinction (and is difficult to accomplish).

B+, B, B-   Work indicates good comprehension of the course material, including understanding of research philosophy, a good command of statistical methods, and the ability to demonstrate those things on assignments, tests, and in presentations.

C+, C, C-   Earned by work that demonstrates satisfactory comprehension of the course material; student has met the basic requirements for completing assigned work and participating in class activities.

D+, D   Work is not fully satisfactory but the student participated enough in the class activities and has enough of a command of research and statistical methods to be (minimally) worthy of course credit toward a degree.

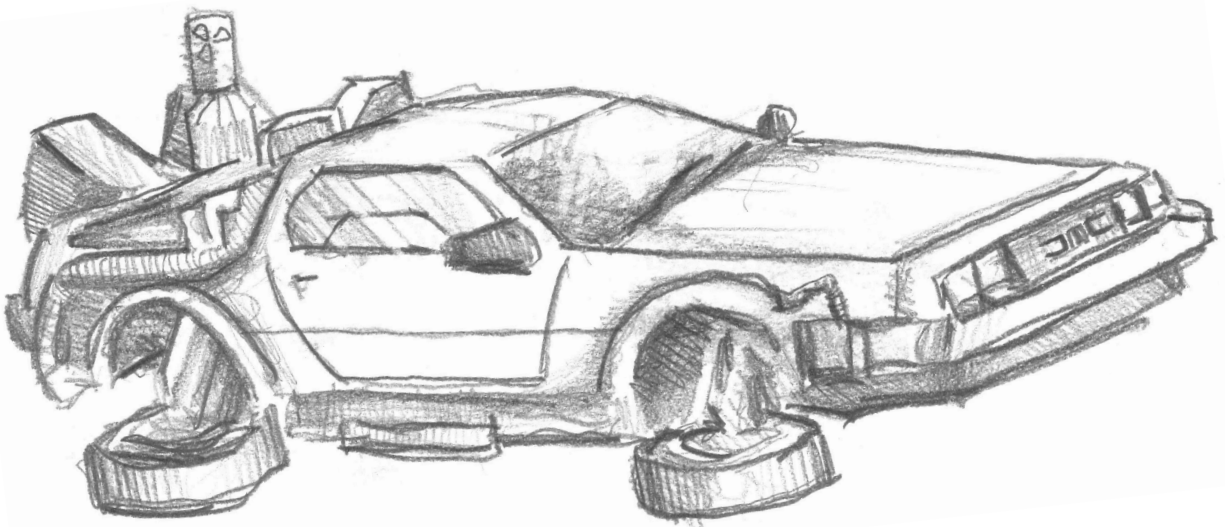F   Quality of work is not satisfactory and is unworthy of course credit.

7. End of the Semester Inflation Requests

Student:

"We've reached the end of the semester and I seem to have finished in the B+ zone. Is there anything I can do to bump my grade up to an A- or an A?"

Professor:

"You could invent a time machine, go back a few months, study harder, and get better grades on the exams."

8. Student Responsibilities / Tips on Meeting Expectations

- By watching lectures, you'll be given all of the necessary information to receive a 100% score on every quiz and both take-home exams.

- The only due date is the end of the semester. But if you wait to begin the work, the workload will be impossible. And that "due date" is not negotiable. It's a short session, so try to stay ahead.

- If you become aware of a scheduling conflict (an *important* conflict) that precludes your presence, please let me know as soon as possible.

- Emergencies. I understand these, and experience them myself. In the case of an emergency, you don't need to contact me in advance. Just attend to your situation and notify me when you can.

- All students must abide by the University of the Pacific's policy regarding academic honesty (page 14 of Tiger Lore Student Handbook) and the University Honor Code:

  The Honor Code at the University of the Pacific calls upon each student to exhibit a high degree of maturity, responsibility, and personal integrity. Students are expected to:

  1) Act honestly in all matters
  2) Actively encourage academic integrity
  3) Discourage any form of cheating or dishonesty by others
  4) Inform the instructor and appropriate university administrator if she or he has a reasonable and good faith belief and substantial evidence that a violation of the Academic Honesty Policy has occurred.

Violations will be referred to and investigated by the Office of Student Conduct and Community Standards. If a student is found responsible, it will be documented as part   of his or her permanent academic record. A student may receive a range of penalties, including failure of an assignment, failure of the course, suspension, or dismissal from the University. The Academic Honesty Policy is available at: http://www.pacific.edu/Campus-Life/Safety-and-Conduct/Student-Conduct/Tiger-Lore-Student-Handbook-.html

9. Accommodations for Students with Disabilities

If you are a student with a disability who requires accommodations, please contact the Office of Services for Students with Disabilities (SSD) for information on how to register for services and request accommodations.

1. Student must register for services by completing the intake and registration process and provide supportive documentation found at pacific.edu/disabilities.
2. Student requests accommodation(s) letters each semester online through the SSD Student Portal found at pacific.edu/disabilities.
3. As needed, student arranges to meet with their professor to discuss the accommodation(s).

To ensure timeliness of services, it is preferable that you obtain the accommodation email letter(s) from SSD within the first two weeks of classes starting.

The Office of Services for Students with Disabilities is located in the McCaffrey Center Room 229, 2nd floor
Phone: 209-946-3221
Email: ssd@pacific.edu
Online: www.pacific.edu/disabilities

10. Professor's (i.e., My) Responsibilities

1. Canvas postings: I will maintain a presence on Canvas. Not a particularly sophisticated one, but certainly a routine one. You can find the syllabus, all lecture slideshows, and additional readings there.

2. Office hours: I won't be "in my office", but I'll be in the DeRosa Student Center during the hours stated on the first page. "Is it possible to schedule an appointment with you outside of those hours?" Possible. But I do receive approximately 20 hours / week of requests above what I'm capable of addressing. If I were two people, I could manage every request. But I'm just a person. I'll try. But the workload exceeds what a person can do at times. Sorry ☹

3. Phone and email responses: I will be as punctual as I can be with response times. At the busiest times of the semester, it won't feel that way. But I'll do my best. If you have a lot of questions or your questions would require a lot of typing, I might ask that you take advantage of office hours.

4. Returning and exams and lab reports: You'll get your lab reports back by the time you submit the next one. Your exams are digital, so you'll get the grade as soon as you finish taking it. When there are extra credit questions, those aren't assigned to your Canvas score. I'll make sure you get those by the next class period.

5. Lecture videos: These are posted in the way that **NETFLIX** posts seasons of a show: all of them all at once. For class, it's the whole semester. And the videos are served à la carte. There are no accompanying materials (audio files or transcripts or PowerPoint slideshows). Everything you need is in these videos though. And you can rewind and re-watch as much as you want.

6. Changes to class schedule: I reserve the right to change the class schedule as required.   For example, if a fire is currently consuming Stockton, we'll probably postpone our lectures. I will also have medical appointments that conflict with the class schedule on time. I'm not going to risk mortality for class sessions, so that has to be my first priority. In any schedule-changing event, I will post all changes on Canvas *and* announce them in class.

7. *Preferred pronouns:* I tend to call people by their names. Excepting words like "they" and "somebody" (and those that involve me, e.g., I and mine), I'm not very pronouny in my speech. But if you have a pronoun that would not be obvious to me (or feel like sharing your obvious pronouns), please, please do so. Let me know at any time and I will, of course, respect and honor it. I may not have time to discuss exam grades in detail or respond to administrative questions (or whatever), but being polite and fostering an inclusive learning environment that feels safe and dignified doesn't take time. I'm not Dolores Umbridge. Every day, I receive about 15 hours of requests beyond what any human is capable of doing, but addressing people as they wish to be addressed takes 5 seconds.

11. Course Objectives and Outcomes

Lecture & Laboratory Objectives:

1. Understand the different fields of research (e.g., epidemiology vs. randomized, controlled trials) and know a bit about their theory and history (i.e., research and how it got that way).

2. Develop an understanding for the research method. Be able to define the aims of research and know more about those aims than a bunch of memorized lines. And be able to perform (with understanding and competence) each stage of the research process.

3. Be able to invent a researchable epidemiological question and establish an appropriate, testable hypothesis.

4. Access the technological resources for research (PubMed, Pacific's library, etc.). Be able to conduct a reasonable (comprehensive and unbiased) systematic review of the literature.

5. Understand the different types of variables. Know examples of each and know *why* those examples *are* examples (don't just memorize examples; actually understand them).

6. Be able to collect epidemiological data, organize it, and prepare it for analysis.

7. Compare/contrast different statistical methods: which analysis is best to answer what type of question? Know standard testing protocols: how are things measured? Be able to run (and understand) the following analyses in SPSS:

1) Measurements of central tendency
2) Bivariate correlations
3) Chi-squared test
4) T-test (paired and independent samples)
5) Binary logistic regression
6) Poisson/negative binomial regression
7) Simple/multiple linear regression
8) One-Way ANOVA
9) Two-Way ANOVA
10) Mixed ANOVA

8. After analyzing data, be able to correctly interpret your findings, appropriately report them, and understand what you're saying.

9. Develop a poster and prepare a presentation for it. This is step one of disseminating scholarly work. Step two is submitting manuscripts for publication. We're not doing step two in this class; only step one. If you decide you want to know about the process of article submission, you can read the chapters about it in the ACSM textbook:

**Chapter 21: Submitting a Manuscript for Publication:
Finding the Publication Outlet**
William J. Kraemer, PhD, FACSM
David P. Looney, MS, CSCS
David R. Hooper, MA
Tunde K. Szivak, MA
Shawn D. Flanagan, MA, MHA

10. Remember the content that matters to you; be able to apply it to your career.

Block 1 — Defining Science, Research, and Epidemiology

Lecture 1   **Monday, January 13**

Introduction to Epidemiology
  Syllabus
  Course Orientation
  Expectations

Lecture 2   **Wednesday, January 15**

Fundamentals of Science and Scientific Inquiry: How We Know What We Know
  What is Science? What is Research?
  What is the Purpose of Science and Research?
  What is the Importance of Science and Research?
  How are Science and Research Communicated?
  A Basic History of Research
  The Fundamental Concept of Testing Predictions
CORRESPONDING TEXTBOOK MATERIAL:
  ACSM Research Methods: Chapter 1 (1-8)

Lecture 3   **Friday, January 17**

Fundamentals of Study Design
  What is a Research Question?
  What are the Inputs and Outcomes?
        Independent Variables
        Dependent Variables
  What are the Categories of Research?
        Descriptive Research
                Case Study, Case Report, Case Series
                Correlational Studies
                Cross-Sectional Studies
        Observational Research
                Cohort Study
                Case-Control Study
        Experimental Research
                Randomized, Controlled Trials
        Systematic Reviews and Meta-Analyses
CORRESPONDING TEXTBOOK MATERIAL:
  ACSM Research Methods: Chapter 5 (73-90)
  ACSM Research Methods: Chapter 7 (121-141) ←Optional
  Epidemiology 101: Chapter 6 (105-119) (2nd Edition: Chapter 7)

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Lecture 4   **Wednesday, January 22**

Developing a Research Question
> Writing a Hypothesis
> Appropriate Independent and Dependent Variables
> Person Variables, Place Variables, Time Variables
> Moderator and Mediator Variables
> Identifying Covariates and Confounding Variables

CORRESPONDING TEXTBOOK MATERIAL:
> *Epidemiology 101*: Chapter 4 (65-87) (2nd Edition: Chapter 5)
> *ACSM Research Methods*: Chapter 3 (29-49)

Lecture 5   **Friday, January 24**

Bench to Bedside: The Utility of Biomedical Research
> The Scientific Method and the Uncertainty of Outcomes
> Variance: The Scatter that Accompanies Outcomes
> Evidence-Based Practice in the Clinic
> Benefits and Pitfalls of Evidence-Based Treatment
> The Hierarchy of Evidence
> Proper Understanding of Scientific Findings
> Proper Application of Scientific Findings

CORRESPONDING TEXTBOOK MATERIAL:
> *ACSM Research Methods*: Chapter 6 (93-118)

Lecture 6   **Monday, January 27**

19th Century Epidemiology: Development and Philosophy of Epidemiological Surveillance
> Definition of Epidemiology
> Development of Epidemiological Principles
> Historical Perspective: Landmark Investigations in Epidemiology

CORRESPONDING TEXTBOOK MATERIAL:
> *Epidemiology 101*: Chapter 1 (1-23) (2nd Edition: Also Chapter 1)

Lecture 7   **Wednesday, January 29**

20th Century Epidemiology: Development of Epidemiological Tools and Questions
> Presentation of Epidemiological Data
> The Causes of Chronic Disease (e.g., Lung Cancer, Diabetes, and Heart Disease)
> Epidemiology of Physical Activity and the Obesity Epidemic
> Pregnancy, Maternity, and Child Health
> Health Concerns in Aging Populations

Lecture 8   **Friday, January 31**

20th Century Epidemiology: Important Discoveries and Inappropriate Conclusions
> Historical Perspective: What Went Right and What Went Wrong
> Current State of Epidemiology
> Conclusions and Decisions in Health and Medicine
> Epidemiology: "Is It Time to Call It a Day?"

Lecture 9   **Monday, February 3**

Epidemiology: *Traditional* Current Applications: A Brief Introduction
      Epidemiology = Epidemics
      Health and Social Epidemiology
            The Outbreak and Transmission of Diseases and Disasters
            The Tragedies that Accompany Sexual Exposure
      Occupational Epidemiology
            Exposure to (and Handling of) Chemicals and Materials
      Medical Epidemiology
            Patient Outcomes
      Biological Epidemiology
            Genetic Associations

Lecture 10   **Wednesday, February 5**

Epidemiology: Future Applications
      "Big Data" and the Information Age
      Big Data's Congenital Problems (Which Require Special Care)
      Health and Medicine
            Perks and Problems with "The Google Flu"
      Epidemiological "Startups"
      Epidemiologically Appraising the Superstore Shopper
      Future Applications in Epidemiology

Lecture 11   **Friday, February 7**

Review of All Material from This Block
      The History, Purpose, and Importance of Science and Research
      The Types of Variables
            Independent/Dependent, Moderator/Mediator, Confounding, etc.
      Study Designs (Categories of Research) and the Hierarchy of Evidence
      The Development of a Research Question and Establishing a Hypothesis
      Bench-to-Bedside: Benefits and Pitfalls of Evidence-Based Practice in the Clinic
      Historical and Modern Epidemiology: Where It Came from and Where It's Headed

Exam 1 covers all the above information.
It will be held on **Monday, February 10**.

Block 2 Understanding and Performing the Fundamental Epidemiological Analyses

Lecture 12   Wednesday, February 12

Post-Exam Housekeeping (Tips, Etc.)
Building a Background: Conducting a Literature Review
  Searching for (and Extracting Information from) Peer-Reviewed Journals
  Evaluating Journal Quality (e.g., Open Access, Impact Factor, etc.)
  Medical Databases: PubMed/MEDLINE, Google Scholar, Scopus, and Web of Science
Building a Database: What to Include and How to Include It
  Development and Management of Variables
CORRESPONDING TEXTBOOK MATERIAL:
  ACSM Research Methods: Chapter 4 (51-72)
  ACSM Research Methods: Chapter 17 (305-323) ←Optional

Lecture 13   Friday, February 14

The "P-Word": Understanding the Misunderstood Meaning of "Significance"
  The Meaning of "Significance"
  History of the P-Value: The Genius of Ronald Fisher
  Statistical vs. Practical Significance
  Type I vs. Type II Errors
CORRESPONDING TEXTBOOK MATERIAL:
  ACSM Research Methods: Chapter 2 (9-26)

Lecture 14   Wednesday, February 19

The "P-Word" Part 2: Standard Quantitative Reporting and Threats to Validity
  Rules for Employing a P-Value
  Internal vs. External Validity
  GIGO *(Garbage In, Garbage Out)*
  Representative Sampling
CORRESPONDING TEXTBOOK MATERIAL:
  ACSM Research Methods: Chapter 8 (143-160)
  ACSM Research Methods: Chapter 19 (343-356) ← More optional than the rest

Lecture 15   Friday, February 21

The "P-Word" Part 3: Employing the P-Value Responsibly
  Factors Affecting the Quality of Epidemiological Data
    Subject Adherence
    Management of Outliers
    Appropriateness of Equipment
    Deliberate vs. Accidental Error
    Causality in Epidemiological Analyses

Lecture 16 **Monday, February 24**

Building a Poster Section by Section

        Introduction

        Purpose

        Methods

        Statistical Analysis

        Results

        Conclusions

Epidemiological Databanks and Resources

        Types of Epidemiological Measurements

        Epidemiological Measurements: Focus on Morbidity and Mortality

        U.S. Census Bureau and the National Center for Health Statistics

        Case Registries

        International Organizations and Data Sources

Initial Analyses: Describing Your Population with Numbers

        Descriptives

        Frequencies

        Central Tendency (Mean, Median, Mode)

Detecting Significant Differences Between Samples

        Chi-Squared Test

        Paired Samples T-Test

        Independent Samples T-Test

            How to Conduct All Tests and Interpret Their Outputs

Building your "Table 1"

Introduction to (and Instructions for) Lab #1

        Analyzing Medical Data to Detect Meaningful Group Differences

CORRESPONDING TEXTBOOK MATERIAL:

        Epidemiology 101: Chapter 3 (45-62) (2nd Edition: Chapter 4)

Lecture 17 **Wednesday, February 26**

Epidemiological Investigations: Making Predictions and Understanding Associations

        Introduction to Regression Analyses: What Are They?

            Binary Logistic Regression

            Poisson/Negative Binomial Regression

            Simple Linear Regression

            Multiple Linear Regression

        Appraising the Quality of a Database: Does It Permit Regression Analyses?

            Descriptive Statistics: "Explore" Feature

            Skewness and Kurtosis

            Tests of Normality

            Histograms

        Introduction to Lab 2

Lecture 18   **Friday, February 28**

Still Introducing Regressions (and Explaining Cases of Epidemiology Gone Wrong)
- Epidemiology Inappropriately Used in Popular News
- More Data Appraisal: Does Your Database Permit Regressions?
- Constructing Scatterplots in SPSS
- Bivariate Correlations: Deciding Which Variables to Include in a Regression Analysis
  - (Karl) Pearson's r
- Conducting a Simple Linear Regression

Lecture 19   **Monday, March 3**

Still Talking About Regressions (There's a Lot to Discuss)
- Review of Simple Linear Regression
- Multiple Linear Regression: Conducting the Analysis and Interpreting the Outputs
  - Independent and Dependent Variables
  - R^2
  - Unstandardized Beta
  - Confidence Intervals
- Odds-Based Predictions: Binary Logistic Regression
  - Understanding Likelihood and Odds Ratios
  - Conducting and Interpreting a Logistic Regression
  - Nagelkerke R^2
  - Exp(B): Exponentiation of the Beta Coefficient... It's an Odds Ratio
  - Confidence Intervals for Odds Ratios
- Poisson/Negative Binomial Regression: Understanding the Theory and Context

Lecture 20   **Wednesday, March 5**

Deciding on the Most Appropriate Analysis (Ridiculously Important, So Listen Up)
- Descriptives and Frequencies
- Independent-Samples and Paired-Samples T Tests
- Chi-Squared Test
- Bivariate and Point Biserial Correlations
- Logistic Regression
- Negative Binomial Regression
- Linear Regression

Reading Outputs (Still Ridiculously Important, So Keep Taking Notes and Stuff)
- Descriptives and Frequencies
- Independent-Samples and Paired-Samples T Tests
- Chi-Squared Test
- Bivariate and Point Biserial Correlations
- Logistic Regression
- Linear Regression

Lecture 21 Friday, March 7

Deciding on Statistical Tools *(Consider Your Project)*: More Examples of Analyses and Outputs
Making Predictions: Receiver Operating Characteristic Curves
      History of ROC Curve
      Uses of ROC Curves (in the clinic)
      Generating an ROC Curve
      Sensitivity and Specificity
      Context for Application
Poster Progress: Advancing Your Projects
      Advice for Research Questions and Statistical Approaches

Lecture 22 Monday, March 17

Reading Scenarios and Deciding on a Statistic
Reading Outputs and Deciphering Meanings
Review of All Material from This Block
      Conducting Appropriate Literature Reviews and Evaluating Journal Quality
      The History and Meaning of Significance in Statistical Testing
      Type I and Type II Errors; Internal and External Validity
      The Big, Important Figures in Statistical History (Pearson, Gossett, Fisher)
      Measurements of Central Tendency (Mean, Median, and Mode)
      Correlation vs. Causality (i.e., "Causation" Because it Rhymes)
      Preliminary Tests: Frequencies, Descriptives, and Bivariate Correlations
      Detecting Differences Between Samples: Chi-Squared Tests and T-Tests
      Regression Analyses: What Conditions Call for Which Model?
      Where Does Epidemiology Often Go Wrong?
      GIGO and the Methods of its Trash (Deliberate and Accidental Error)
      Representative Sampling, Subject Adherence, Appropriateness of Equipment

Exam 2 covers all the above information. It will be on **Wednesday, March 19**.

Block 3 Applications of Epidemiology (Including Your Project)

Lecture 23   Friday, March 21

Discussing Exams
Pep Talk
Reading SPSS Outputs

Lecture 24   Monday, March 24

Reading Scenarios, Deciding the Most Appropriate Statistical Tool
Qualitative Research
       Biopsychosocial Model
Wherever Possible, Use Unbiased Measurements; If Totally Impossible…
Qualitative Research in Theory and in Practice
       Case Report
       Narrative Study
       Phenomenological Study
       Grounded Theory
       Ethnography

Lecture 25   Wednesday, March 26

Finishing Qualitative Designs
Methodological Choices in Various Scenarios
Reading Statistical Outputs

Lecture 26   Friday, March 28

Collecting Survey Data
       Questionnaire Program You Can Use: SurveyMonkey
Considerations in Sampling (Beyond Roosevelt vs. Landon)
Considerations in Data Collection, Management, and Dissemination
Randomization
       Single vs. Double Blinding
Publication Bias
       How It Arises and Why It Matters
Ethical Data Collection and Reporting
       Fabrications, Falsifications, and Fraud… And Prison Sentences
CORRESPONDING TEXTBOOK MATERIAL:
       ACSM Research Methods: Chapter 20 (359-372)

Block 4 *The Statistical Models that Follow Epidemiology*

Lecture 27   Monday, March 31

After Epidemiology: What Comes Next
> Experimental Design: Introduction to Analysis of Variance (ANOVA)
> Theory and Uses of Repeated Measures ANOVA

One-Way Repeated Measures ANOVA
> Assumptions
> Conducting the Test in SPSS
> Reading and Understanding the Outputs
> Reporting Your Findings

Lecture 28   Wednesday, April 2

Experimental Designs: More ANOVA Models
> Theory and Uses of *More* ANOVA

Two-Way Repeated Measures ANOVA
> Assumptions
> Conducting the Test in SPSS
> Reading and Understanding the Outputs
> Reporting Your Findings

Other ANOVA Models
> Characterization of Mixed, MANOVA, ANCOVA, and MANCOVA

READING:
> *ACSM Research Methods*: Chapter 14 (253-262)
> *ACSM Research Methods*: Chapter 18 (325-342) ←Helpful during block 2 as well

Lecture 29   Friday, April 4

Finishing ANOVA
Deciding on Statistical Tools for Diverse Research Questions

Lecture 30   Monday, April 7

Calculating Effect Size and Estimating Your N
> What Determines a Healthy N (Precision, Variation, Magnitude of Effect, Etc.)

GPower Software
> Independent-Samples T Test
> Paired-Samples T Test
> Linear Regression

Online Power Analysis
> Linear Regression

Lecture 31   **Wednesday, April 9**

Writing, Presenting, and Publishing in Epidemiology
       Poster Presentations
       Oral Presentations
       Manuscripts
How to Write, Speak, and Present Like a Literate Person (Part 1)
       Grammar and the Epidemiologist's Parlance
       Common Errors You Should Never Make (But Probably Are Making)

Lecture 32   **Friday, April 11**

Literacy in Reporting (Part 2)
       More Common Errors and Corrections of Them

Lecture 33   **Monday, April 14**

Literacy in Reporting (Part 3)
       Rhetorical Tricks to Tidy Your Language

Lecture 34   **Wednesday, April 16**

Nope Part 1: Distortions in Translation: It's How You Say It
       Misleading (and Otherwise Inappropriate) Reporting of Findings
       Appropriate Reporting of Findings (How to Be an Honest Attorney)
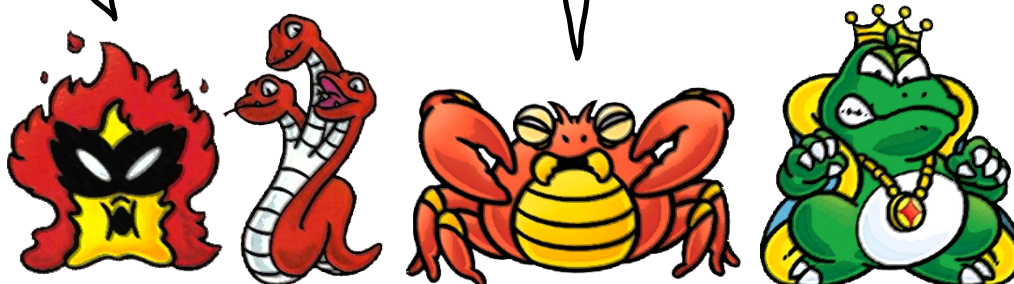

Lecture 35   **Friday, April 18**

Nope Part 2: Spotting Fallacies Everywhere

The following week, you'll take time to create your posters and present them online.

Exam 3 is on the last day of class: Monday, April 28 at 8:00am.
It covers all the information above. But mostly statistics.

13. Additional *(helpful, but not necessary)* Information

Validity and Reliability. We'll talk about this some; if you want to know more:

Chapter 10: Veracity of Data: Understanding Validity and Reliability
Lori L. Ploutz-Snyder, PhD
Jessica M. Scott, PhD

Institutional Review Boards (what you can and can't ethically do in research):

Chapter 12: Ethical Principles in Human and Animal Research
Matthew D. Barberio, PhD
Margaret K. Bradbury, MS, CGC, MSHS
Monica J. Hubal, PhD

More detail on analyses, mostly biological (before the stats of chapters 6 and 18):

Chapter 16: First Analyses After Data Collection
Elaine C. Lee, PhD
Kathrine R. Weeks, PhD

Information about influencing and implementing health policy (cost-benefit analysis, decisions based on risks and benefits, etc.):
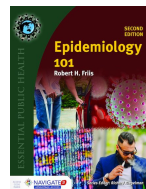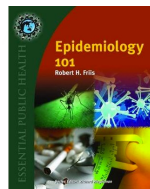

Chapter 8 if you're using the 2nd Edition

14. Course Evaluation

1. Copies of student work may be retained to assess how the learning objectives of the course are being met. And I might scan your work (just the good bits) for future slideshows.

2. If you have suggestions ("it'd be great if we could learn about…"), feel free to speak up. If possible, we will accommodate those suggestions. If not possible, don't hesitate to attend office hours and we can chat about your suggestions.

3. We'll do the student evaluations at the very end of the semester. I prefer to do it on the last day of class, immediately after the final. That feels like the best way for you to know what it is you're evaluating. Filling out the forms three weeks before the end of class seems odd to me. It's like reviewing a movie without watching the last 20 minutes. That said, digital evals are sort of imprecise. So… somewhere around the end of the semester, this will happen.

15. Letters of Recommendation
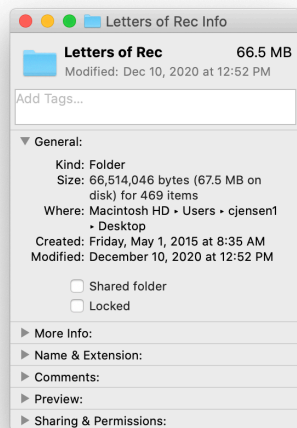
I get a lot of requests. That picture is of my Letters of Rec folder. I came to Pacific in 2015. Before the end of 2020 (when I took that screen shot), I had written 469 letters. Today, it's 704. During my first year, I wrote a letter for every student who asked. During my second year, I came close. And then I never came close again. Today, the difference between the number of requests I receive and the number of letters a human being can write is funny. Why am I telling you this? To warn you that you might not get a letter of recommendation from me. Not because you don't deserve one – you very likely will – but because I'm just a person… and there's only so much I can do. So… if you want a letter from me at some point, you need at least a B+ in every class we've had together, and I need at least a month's notice (my wait list is always at least 10 students long). I also need some information about you. That speeds up my process. If I have to sit down and come up with the whole thing from scratch (and then look up awards, grades, dates that you took my classes, etc.), it's going to take me all day. If I have a list of letter ingredients in front of me, I can do it in an hour.

The more work *you* put in – sending me your résumé, transcript, and everything you want highlighted – the more compelling my letter will be. So… if you want a template, don't give me much to work with. But if you want a page of sunshiny, glowing praise, help me out.

16. University Calendars

Spring 2025

Description	Date(s)
Payment Deadline for Spring 2025	January 1
Classes Begin	January 13
Martin Luther King, Jr. Day (Holiday - no classes)	January 20
# Last Day to Add Classes	January 24
# Last Day for Pass/No Credit or Letter Grade Option	January 24
# Last Day to Drop Classes (without record of enrollment)	January 24
# Last Day to Drop Classes with 100% Refund	January 24
Last Day for Pro-Rated Refund	February 7
Census Date	February 7
Deadline for faculty to submit week 5 Early Grades	February 14
Presidents' Day (Holiday - no classes)	February 17
Summer 2025 /Fall 2025 Schedule of Classes Available	March 10
Spring Break	March 10-14
* Advising for Summer/Fall 2025 for continuing students(excluding spring break)	March 17-28
Classes Resume	March 17
Last Day to Withdraw	March 21
* Summer 2025 Registration Opens for continuing students (no appointments required)	March 31
* Early Registration Appointments begin for continuing students Fall 2025	March 31
Classes End	April 29
Study Day	April 30
Final Examination Period	May 1-7
Commencement (Stockton)	May 10
Commencement - School of Health Sciences	May 11
Deadline for Faculty to Submit Grades	May 12

Spring 2025 Examination Schedule
(Stockton Campus)

final exam Schedule

Thursday, May 1, 2025 through Wednesday, May 7, 2025*

Faculty Online Grading Ends: 5 p.m., Monday, May 12, 2025
Unofficial Student Grades Available Online: Tuesday, May 13, 2025

Day/Time of Final	Thursday	Friday	Monday	Tuesday	Wednesday
	May 1	May 2	May 5	May 6	May 7
DAY/TIME OF CLASS					
8-11 a.m.	TR 8–10 a.m.	MWF 9:30–11 a.m.	MWF 11 a.m.–12:30 p.m.	TR 10 a.m.–noon	MWF 8–9:30 a.m.
11 a.m.–noon	Break				
Noon–3 p.m.	TR 1–3 p.m.	MWF 2–3:30 p.m.	MWF 12:30–2 p.m.	X	X
3–6 p.m.	X	X	X	TR 3–5 p.m.	MWF 3:30–5 p.m.
6–7 p.m.	Break				
7–10 p.m.	TR 5–7 p.m. 6–8 p.m.	MW 8–10 p.m.	MW 5–7 p.m. 6–8 p.m.	TR 8–10 p.m.	X