





## *Clinical Epidemiology*


*Fall, 2024*

*CRN: 80951*

*Syllabus*

**Professor:** Courtney Jensen, Ph.D.  
**Graduate Assistant:** Addisen Azevedo  
**Class Location:** WPC, 219  
**Class Days:** Mondays  
**Class Times:** 2:00pm – 5:20pm  
**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  
 Other hours available by 

 Addisen:  
a\_azevedo3@u.pacific.edu

 Courtney:  
cjensen1@pacific.edu

### Course Contents:

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## 1. Purpose and Description of the Course

**HLTH 180** 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 21<sup>st</sup> 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.

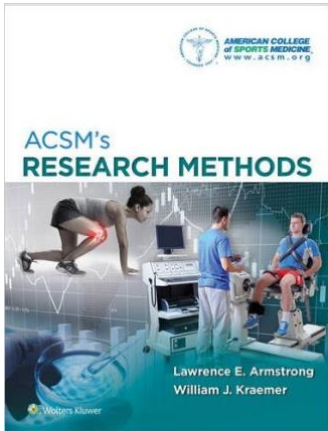
**Prerequisites:** There are no prerequisites for this course. *But:* If your transcript has a statistics class on it, you'll have a head start on your peers. A background in stats is helpful.

*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.*



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## 2. Very Useful Materials



*Suggested (but not required) text:*

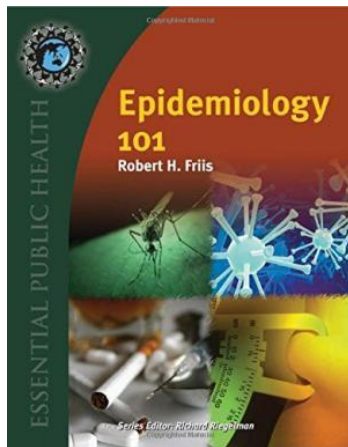
Armstrong LE & Kraemer WJ. (2015). *ACSM's Research Methods*. LWW/Wolters Kluwer, United States.

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.

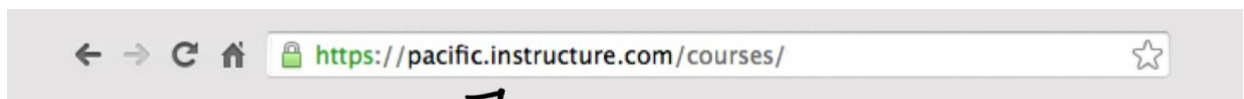
If you're going to get it, just go online, e.g., *Amazon*:


[https://www.amazon.com/s?k=epidemiology+101&i=stripbooks&ref=nb\\_sb\\_noss\\_2](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** 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>.



 This is where you go.

## 4. Tests, Quizzes, and Assignments

<b>Exams:</b> 3 (100 points each)	300 points	Individual
<b>Quizzes:</b> 35 (5 points each)	175 points	Individual
<b>Poster Presentation Video:</b> 4 (100 points)	100 points	Group
<b>Labs:</b> 4 (20 points each)	80 points	Group or Individual
<b>Take-Home Test:</b> 2 (10 points each)	20 points	Group or Individual
<b>CITI Certification:</b> 1 (10 points)	10 points	Individual
<b>IRB Forms:</b> 1 (10 points)	10 points	Group
<b>Happiness Is You!:</b> (5 points)	5 points	Free
<b>Total for the entire semester:</b>	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.

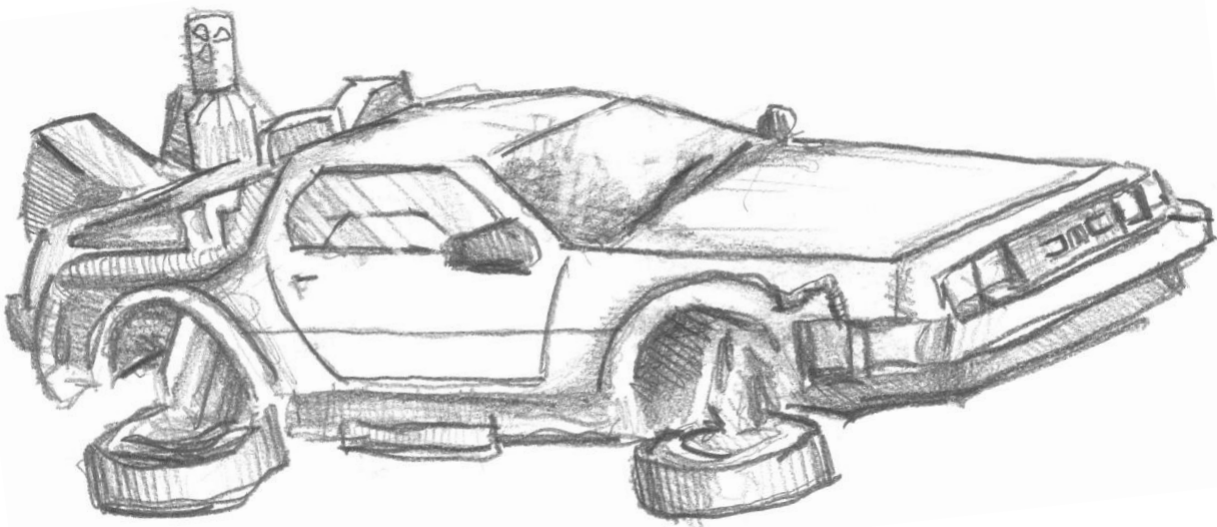
## 7. End of the Semester Inflation Requests

***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](http://pacific.edu/disabilities).
2. Student requests accommodation(s) letters each semester online through the [SSD Student Portal](http://SSD Student Portal) found at [pacific.edu/disabilities](http://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](mailto:ssd@pacific.edu)  
Online: [www.pacific.edu/disabilities](http://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.





## 12. Course Content and Calendar

### **Block 1** *Defining Science, Research, and Epidemiology*

#### **Lecture 1**

**Monday, August 26**

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##### Introduction to Epidemiology

- Syllabus
- Course Orientation
- Expectations

#### **Lecture 2**

**Monday, August 26**

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##### 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**

**Monday, August 26**

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##### 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) (2<sup>nd</sup> Edition: Chapter 7)

**Lecture 4****Monday, August 26**

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**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) (2<sup>nd</sup> Edition: Chapter 5)
- ACSM Research Methods*: Chapter 3 (29-49)

**Lecture 5****Monday, September 9**

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**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, September 9**

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**19<sup>th</sup> 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) (2<sup>nd</sup> Edition: Also Chapter 1)

**Lecture 7****Monday, September 9**

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**20<sup>th</sup> 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****Monday, September 16**

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**20<sup>th</sup> 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, September 16

### 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

Monday, September 16

### 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

Monday, September 23

### 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, September 23**. I’ll spend some time answering questions before the exam begins.



## **Block 2** Understanding and Performing the Fundamental Epidemiological Analyses

### **Lecture 12**

**Monday, September 30**

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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**

**Monday, September 30**

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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**

**Monday, September 30**

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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**

**Monday, October 7**

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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

**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) (2<sup>nd</sup> Edition: Chapter 4)

**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****Monday, October 14**

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**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, October 14**

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**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****Monday, October 14**

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**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

Monday, October 21

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, October 21

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 held on **Monday, October 28**.



## **Block 3** *Applications of Epidemiology (Including Your Project)*

### **Lecture 23**

**Monday, November 4**

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Discussing Exams  
Pep Talk  
Reading SPSS Outputs

### **Lecture 24**

**Monday, November 4**

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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**

**Monday, November 4**

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Finishing Qualitative Designs  
Methodological Choices in Various Scenarios  
Reading Statistical Outputs

### **Lecture 26**

**Monday, November 11**

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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, November 11

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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

Monday, November 11

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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

Monday, November 18

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Finishing ANOVA

Deciding on Statistical Tools for Diverse Research Questions

## Lecture 30

Monday, November 18

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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**

**Monday, November 18**

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**

**Monday, November 25**

Literacy in Reporting (Part 2)

More Common Errors and Corrections of Them

**Lecture 33**

**Monday, November 25**

Literacy in Reporting (Part 3)

Rhetorical Tricks to Tidy Your Language

**Lecture 34**

**Monday, December 2**

Nope Part 1: Distortions in Translation: It's How You Say It

Misleading (and Otherwise Inappropriate) Reporting of Findings

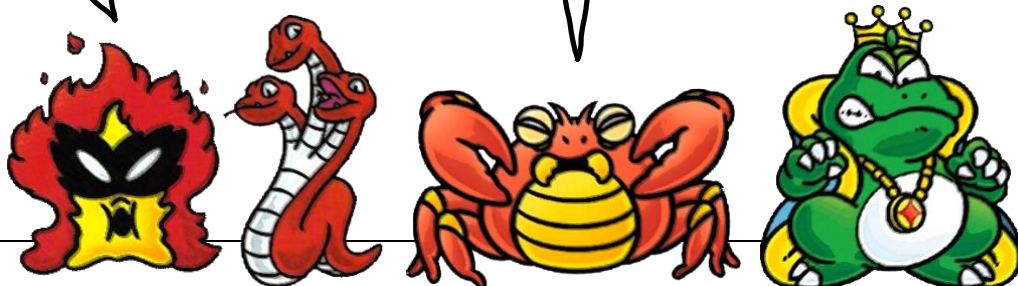
Appropriate Reporting of Findings (How to Be an Honest Attorney)

**Lecture 35**

**Monday, December 2**

Nope Part 2: Spotting Fallacies Everywhere

Exam 3 is on the day of our final: **Wednesday, December 11** from **noon to 3:00pm**. It covers all the above information.



### 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**

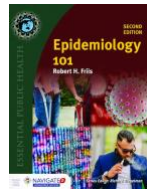
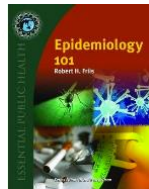
Matthew D. Barberio, PhD  
Margaret K. Bradbury, MS, CGC, MSHS  
Monica J. Hubal, PhD

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.):



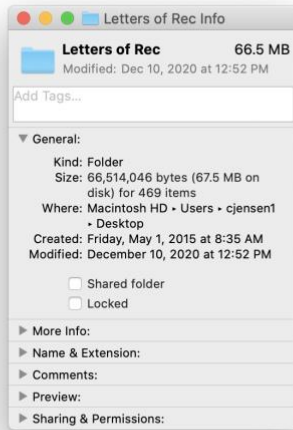
Chapter 8 if you're using the 2<sup>nd</sup> Edition



### 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 693. 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

*Final exam Schedule*

Day/Time of Final	Monday Dec. 9	Tuesday Dec. 10	Wednesday Dec. 11	Thursday Dec. 12	Friday Dec. 13
<b>DAY/TIME OF CLASS</b>					
<b>8-11 a.m.</b>	MWF 8-9:30 a.m.	TR 10 a.m.-noon	MWF 9:30-11 a.m.	TR 8-10 a.m.	MWF 11 a.m.-12:30 p.m.
<b>11 a.m.-noon</b>	Break				
<b>Noon-3 p.m.</b>	MWF 12:30-2 p.m.	TR 1-3 p.m.	MWF 2-3:30 p.m.	X	X
<b>3-6 p.m.</b>	X	X	X	TR 3-5 p.m.	MWF 3:30-5 p.m.
<b>6-7 p.m.</b>	Break				
<b>7-10 p.m.</b>	MW 8-10 p.m.	TR 8-10 p.m.	MW 5-7 p.m. 6-8 p.m.	TR 5-7 p.m. 6-8 p.m.	X

### **Our final exam:**

Wednesday, December 11

Noon to 3:00pm

# Fall 2024

Description	Date(s)
Payment Deadline for Fall 2024	August 1
Classes Begin	August 26
Labor Day (Holiday - no classes)	September 2
# Last Day to Add Classes	September 6
# Last Day for Pass/No Credit or Letter Grade Option	September 6
# Last Day to Drop Classes (without record of enrollment)	September 6
# Last Day to Drop Classes with 100% Refund	September 6
Last Day for Pro-Rated Refund	September 20
Census Date	September 20
Deadline for faculty to submit week 5 Early Grades	September 27
Fall Student Break	October 4
Spring 2025 Schedule of Classes Available	October 7
* Advising for Spring 2025 for continuing students	October 14-25
Last Day to Withdraw	October 25
* Early Registration Appointments begin for continuing students-Spring 2025	October 28 - November 1
Thanksgiving Break	November 27-29
Classes Resume	December 2
Classes End	December 6
Final Examination Period	December 9-13
Deadline to Petition to Walk in May 2025 Commencement (Summer 2025 Graduates)	December 13
Deadline for Faculty to Submit Final Grades	December 17