

**PBH
365**



***Applied
Biostatistics
for
Public
Health***

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Professor Information

Name & Position

C. L. Cross, PhD, MFT, PStat[®], C-MDI
ASA Accredited Professional Statistician[®]
UNLV School of Public Health
Department of Environmental & Occupational Health

Contact Information

OFFICE: GTW 388
TELEPHONE: 702-895-4345
E-MAIL: chad.cross@unlv.edu

Office Hours

Monday 1:00pm-4:00pm
Thursday 1:00pm-3:00pm

- You must schedule an appointment at: drcross.youcanbook.me
 - You must use your UNLV email address for the booking

Email & Classroom Response Time

I will make every effort to respond to messages within 24 hours **Monday-Friday**. Feedback for completed exams and assignments is dependent upon the length and breadth of the activity and could take up to several days.

Textbooks, Supplements, and Software

Required

Title: *Biostatistics for the Biological and Health Sciences*
Author(s): Marc M. Triola, Mario F. Triola, Jason Roy
Edition: 2nd
ISBN: 9780134039206
Availability: <http://www.mypearsonstore.com/bookstore/biostatistics-for-the-biological-and-health-sciences-0134039017>

References

Title: *Biostatistics: A Foundation for Analysis in the Health Sciences*
Author(s): Wayne W. Daniel & Chad L. Cross

Edition: 11th

ISBN: 9781119496571

Availability: <https://www.wiley.com/en-us/Biostatistics%3A+A+Foundation+for+Analysis+in+the+Health+Sciences%2C+11th+Edition-p-9781119496571>

Course notes & other information are available on the UNLV Canvas website
<https://unlv.instructure.com/>

Software

Title: JASP

Location: Available for download (free) to your personal computer

Availability: <https://jasp-stats.org/download/>

Title: BioStatCalc365

Location: Download from Canvas

Availability: Any computer with Excel 2010 or higher after download

- Course notes & other information are available on the UNLV online campus website
<https://unlv.instructure.com/login/ldap>

Course Information

Description

This course provides an introduction to biostatistical concepts and reasoning and provides a survey of data and data types. Specific topics include tools for describing central tendency and variability in data; methods for performing inference on population means and proportions via sample data; statistical hypothesis testing and its application to group comparisons; issues of power and sample size in study designs; and random sample and other study types. While there are some formulae and computational elements to the course, the emphasis is on interpretation and concepts.

Prerequisites

MATH 124 or higher

Class Schedule

The course will meet each week of the semester according to the schedule below unless otherwise noted in the [Tentative Course Schedule](#).

Course Objectives

| Objective/Outcome | Competency |
|--|------------|
| 1. Identify problems, articulate questions or hypotheses, and determine the need for information | UULO2.1 |
| 2. Use quantitative and qualitative methods, including the ability to recognize assumptions, draw inferences, make deductions, and interpret information to analyze problems in context, and then draw conclusions | UULO 2.3 |
| 3. Recognize the complexity of problems, and identify different perspectives from which problems and questions can be viewed | UULO 2.4 |
| 4. Evaluate and report on conclusions, including discussing the basis for and strength of findings, and identify areas where further inquiry is needed | UULO 2.5 |
| 5. Identify, analyze, and evaluate reasoning, and construct and defend reasonable arguments and explanations | UULO 2.6 |
| 6. Produce effective visuals using different media | UULO 3.5 |

Canvas Information

The instructor is not able to assist students with technical support for Canvas. Should issues arise, students should contact the IT Help Desk as soon as possible. **Issues with technology will not be a sufficient excuse for late/missing assignments or exams.**

Canvas Support: (702) 895-0777

E-mail: ithelp@unlv.edu

Help Desk Hours: 7 days per week, 7:00am-11:00pm (including holidays)

Walk-in Hours: CBC B-113: 8:00am-5:00pm (M-F); SU 231: 8:00am-8:00pm (M-Th), 8:00am-5:00pm (F), and 12:00pm-5:00pm (Weekends)

Online Help Requests: <https://www.it.unlv.edu/webcampus/canvas/get-help>

Please Note: Every Saturday from midnight to 6:00AM (PST) is reserved for maintenance; therefore, Canvas may be unavailable

Assignment Description and Due Dates

NOTE: All assignments must be uploaded into Canvas; hard copies will not be accepted.

Attendance & Participation

Inasmuch as this course is designed with practical application in mind, participation is paramount to successfully passing this class. Therefore, students will be expected to attend all remote classes and to participate via questions and discussion. Your final grade depends upon your understanding of complex material, and this requires that you attend class! Although attendance is not part of the formal grade, attendance will be taken for each class.

Problem Sets

In order to learn the complexities of the material covered in this course, it is extraordinarily important that you **practice**. It is also equally important that you **prepare for each class** by reading the chapters and by working through practice problems prior to coming to class.

Review exercises of 10 problems will be provided at the conclusion of each chapter. These will be multiple choice and cover problems very similar to those demonstrated in the textbook and in class. **Students must complete these in Canvas.**

These are available on the “Assignments” tab in Canvas. **Students must work individually.**

All problem sets are due according to the [Tentative Course Schedule](#).

Exams

There will be three exams during the semester. These exams will be similar to the problem sets. **Students must complete these in Canvas.**

These are available on the “Quizzes” tab in Canvas. You will have a 2-hour time limit and must complete the exam in one sitting. **Students must work individually.**

All exams are due according to the [Tentative Course Schedule](#).

Accreditation Note

Assignments completed for this course may be used as evidence of student learning in accreditation reports. Students who do not wish their work to be used for accreditation purposes must inform the course instructor in writing by the end of late registration. Your participation and cooperation are appreciated.

Assignment and Exam Late Policy

Missed assignments and projects will be assigned a grade of 0 points. There are no make-up points and there are no extra-credit points available in this class.

Grading Criteria

The course is not curved, and students will be assigned the grade they have earned based on the total percentage they accrue by the end of the semester. **Again, extra points are not available for the course.**

| Evaluation criteria | Number | Points |
|---------------------|---------|--------|
| Problem Sets | 11 @ 10 | 110 |
| Exams | 3 @ 40 | 120 |
| TOTAL | --- | 230 |

| Letter Grade | Percentage Range |
|--------------|------------------|
| A | 100-94 |
| A- | < 94-90 |
| B+ | < 90-87 |
| B | < 87-84 |
| B- | < 84-80 |
| C+ | < 80-77 |
| C | < 77-74 |
| C- | < 74-70 |
| D+ | < 70-67 |
| D | < 67-64 |
| D- | < 64-61 |
| F | < 61 |

Recording

Meetings of this course might be recorded. Any recordings will be available to students registered for this class. This is intended to supplement the classroom experience. Students are expected to follow appropriate university policies pertaining to access of this content. **Recordings may not be reproduced, shared with those who are not enrolled in this class, or uploaded to social media/other online platforms.** Recordings will consist of my voice and of the computer screen; no students will be identifiable by voice or likeness.

UNLV Policies

Public Health Directives

Face coverings are mandatory for all faculty and students in the classroom. Students must follow all active UNLV public health directives while enrolled in this class. [UNLV public health directives](https://www.unlv.edu/coronavirus/health-requirements) are found at <https://www.unlv.edu/coronavirus/health-requirements>. Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the [UNLV Code of Student Conduct](https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf), https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf, including being administratively withdrawn from the course.

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

Auditing Classes

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of electronic devices such as pagers, cellular phones, or recording devices, or potentially disruptive devices or activities are only permitted with the prior explicit consent of the instructor. The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](https://www.unlv.edu/provost/copyright) is available at <https://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to injury, disability, or due to pregnancy should contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours, so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](https://www.unlv.edu/registrar/calendars), <https://www.unlv.edu/registrar/calendars>.

Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](https://www.unlv.edu/studentconduct/misconduct/policy), <https://www.unlv.edu/studentconduct/misconduct/policy>, which states that “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of “F” will be recorded, and the student’s GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](https://guides.library.unlv.edu/appointments/librarian) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](https://ask.library.unlv.edu/) questions via chat and text message at <https://ask.library.unlv.edu/>.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Work policy,

under Registration Policies, on the [Academic Policies](#) webpage, <https://catalog.unlv.edu/content.php?catoid=29&navoid=7326>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student provides official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to: academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Rebelmail

Rebelmail is UNLV’s official email system for students and by University policy, instructors and staff should only send emails to students’ Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Emailing within WebCampus-Canvas is also acceptable.

Tutoring and Coaching

The Academic Success Center (ASC) provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the [ASC website](https://www.unlv.edu/asc), <https://www.unlv.edu/asc>, or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3–301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see [University Statements and Compliance](https://www.unlv.edu/about/statements-compliance), <https://www.unlv.edu/about/statements-compliance>.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.

COVID-19 Update(s)

Any updates to UNLV policy regarding COVID-19 that directly impact instruction in this class will appear in [Canvas Announcements](#).

Tentative Course Schedule

| Week | Date | Topic | Reading | Notes |
|------|-----------|---------------------------------------|----------|---|
| 1 | 1/18 | MLK Holiday | | |
| | 1/20 | Course Overview and Introduction | --- | Syllabus quiz (Due 1/24 @ 11:59pm) |
| 2 | 1/25 | Introduction to statistics | 1 | |
| | 1/27 | Exploring data with tables and graphs | 2.1-2.3 | PSC2 (Due 1/31 @ 11:59pm) |
| 3 | 2/1 | Measures of center | 3.1 | |
| | 2/3 | Measures of variation | 3.2-3.3 | PSC3 (Due 2/7 @ 11:59pm) |
| 4 | 2/8 | Basic concepts of probability | 4.1-4.3 | |
| | 2/10 | Risk, Odds, and Counting | 4.4; 4.6 | PSC4 (Due 2/14 @ 11:59pm) |
| 5 | 2/15 | President's Day Holiday | | |
| | 2/17 | Discrete probability distributions | 5.1 | |
| 6 | 2/22 | Binomial and Poisson distributions | 5.2-5.3 | |
| | 2/24 | EXAM 1: Chapters 1-5 | | PSC5 (Due 2/28 @ 11:59pm) Exam (Due 2/28 @ 11:59pm) |
| 7 | 3/1 | Normal distribution 1 | 6.1-6.3 | |
| | 3/3 | Normal distribution 2 | 6.4-6.6 | PSC6 (Due 3/7 @ 11:59pm) |
| 8 | 3/8 | Estimating a population proportion | 7.1 | |
| | 3/10 | Estimating a population mean | 7.2 | |
| 9 | 3/15-3/19 | Spring Break Recess | | |
| 10 | 3/22 | Introduction to hypothesis testing | 8.1 | |
| | 3/24 | Testing a single proportion | 8.2 | PSC7 (Due 3/28 @ 11:59pm) |
| 11 | 3/29 | Testing a single mean | 8.3 | |
| | 3/31 | Testing two proportions | 9.1 | PSC8 (Due 4/4 @ 11:59pm) |

Continued next page...

| Week | Date | Topic | Reading | Notes |
|------|-----------|-------------------------------------|-----------|---|
| 12 | 4/5 | Testing two means | 9.2-9.3 | |
| | 4/7 | EXAM 2: Chapters 6-9 | | PSC9 (Due 4/11 @ 11:59pm) Exam (Due 4/11 @ 11:59pm) |
| 13 | 4/12 | Simple regression and correlation | 10.1-10.3 | |
| | 4/14 | Multiple regression and correlation | 10.4 | PSC10 (Due 4/18 @ 11:59pm) |
| 14 | 4/19 | G.O.F. tests | 11.1 | |
| | 4/21 | Contingency tables | 11.2 | PSC11 (Due 4/25 @ 11:59pm) |
| 15 | 4/26 | One-way ANOVA | 12.1 | |
| | 4/28 | Two-way ANOVA | 12.2 | PSC12 (Due 5/2 @ 11:59pm) |
| 16 | 5/3 | Nonparametric tests 1 | 13.1-13.3 | |
| | 5/5 | Nonparametric tests 2 | 13.4-13.6 | |
| 17 | 5/10-5/12 | FINAL EXAM: Chapters 10-13 | | Due 5/12 @ 11:59pm |

Dr. Cross reserves the right to change the schedule and requirements for this course. Announcements made during scheduled lectures are your responsibility.