

Sul Ross State University: Epidemiology and Biostatistics
2 credits
Fall 2026

GENERAL INFORMATION

Instructor: Sanggon Nam, PhD, MS

Course Number: TBD

Schedule: Online asynchronous (Blackboard)

Course dates: August 24-December 9, 2026

Synchronous class sessions: None required

Expected class time: 2 hrs per week

Expected homework time: 4 hrs per week

Office Hours: TBD

Office: TBD

E-mail: TBD

DESCRIPTION

This course is comprised of two primary modules: the first is focused on epidemiology and the second on biostatistics. Module One introduces epidemiological methods with the goal of teaching students to read critically and interpret published epidemiologic studies in humans. The course is designed to help the student acquire an understanding of basic principles of epidemiological investigation; causal reasoning and study design in epidemiological analysis; morbidity and mortality statistics; behavioral and socio-environmental factors in disease occurrence and distribution; epidemiological bases of health planning and policies.

Module Two further develops statistical tools commonly applied to a suite of public health issues. The emphasis will not be on the theoretical properties of statistics, but rather on understanding the application and interpretation of these techniques when analyzing medical and epidemiological data. Applied statistical models that will be covered range from basic descriptive statistics to more advanced multivariate regression analyses. A special focus will be placed on exploring statistical tools through the application of IBM SPSS Statistics in online demonstrations and computer exercises.

This course will introduce population-level health research and the role of evidence-based information in addressing critical health issues and includes a practical application of commonly used quantitative study designs and methods.

OBJECTIVES

1. Define key epidemiologic terms: descriptive epidemiology, association, causation, analytic epidemiology, evidence-based public health, translational research, outbreak investigation, etc.
2. Describe the impact of disease on population health
3. Demonstrate a basic understanding of epidemiologic methods and study design.
4. Distinguish the roles and relationships of epidemiology in the prevention of disease and the improvement of health.
5. Summarize results of epidemiological studies
6. Identify difference between an exposure and an outcome and define the relationship between exposures and outcomes in the peer-reviewed literature
7. Identify how demographic and other major factors can influence patterns of morbidity, mortality, and disability in a defined population
8. Describe the methodological linkages between the UN SDGs and the GBD
9. Validate the health status of populations using available data surveillance, data surveys, registries, and/or electronic records
10. Apply epidemiological methods to settings and situations in public health practice
11. Select quantitative data collection methods appropriate for a given public health context
12. Analyze quantitative data using biostatistics, informatics, computer-based programming and software, as appropriate
13. Understand and apply specific descriptive and inferential statistical techniques commonly used in global public health research.
14. Demonstrate the ability to build and assess appropriate regression models, and to draw logical conclusions from the fitted models.
15. Develop, apply, and interpret statistical methods in analyzing and solving problems in biomedical, clinical and population-based research using IBM SPSS Statistics.
16. Interpret results of data analysis for public health research, policy or practice
17. Follow ethical principles and norms for acquiring, managing, and securing data.

REQUIRED READINGS

Required textbook: Merrill, R. M. (2013). *Fundamentals of epidemiology and biostatistics*. Jones & Bartlett Learning. <https://www.jblearning.com/catalog/productdetails/9781284080094>

Required statistical software: IBM SPSS Statistics. Students must have access to a current version compatible with the course data files. Software access and installation instructions will be posted in Blackboard.

Additional required and recommended readings are listed in the course schedule and references, and they will be available in Blackboard.

EVALUATION AND GRADING

Late assignments will lose 10% of the final grade per day it is late (submitted even one minute after 11:59PM on the due date), unless previous arrangements have been made with the professor.

General comment on assignments: All course assignments are to be completed individually unless the instructor explicitly identifies an assignment as “open.” For “open” assignments, you may discuss general concepts, approaches, and software issues with classmates, but you must independently complete and submit your own work. You may not copy another student’s answers, written work, or programming code; doing so is an honor code violation. For individual assignments, you may consult with the instructor but may not discuss the specific questions or solutions with other students or anyone else. Pay careful attention to the instructions for each assignment.

You are required to use a word processing program in preparing all problem sets and lab assignments. Those grading the assignments will deduct points for excessive sloppiness or disorganized presentation that makes grading difficult.

Problem sets: These are designed to highlight the key concepts of a particular lecture or combine multiple principles from the course. There will be 4 of these throughout the semester. They will be posted at least one week before they are due.

Data analysis lab assignments: During the semester, you will complete four structured data analysis assignments using IBM SPSS Statistics. All lab assignments are individual assignments. Each student must independently complete and submit his or her own analysis, SPSS output and syntax (where applicable), interpretation, and written responses. You may consult the instructor regarding software or technical issues, but you may not copy or share answers, output, syntax, or code. Lab assignments will be posted at least two weeks before they are due.

The 8 problem sets and individual lab assignments will jointly be worth 65% of your semester grade. Your lowest grade will be dropped and the remainder will be averaged equally.

8. Grading Policies and Practices

Late assignments: Points will be deducted for late work at a rate of 10%/day, unless an arrangement is made with the professors **in advance**. Extensions for projects or assignments will only be granted in emergency situations and determined on a case-by-case basis.

Assignment Weights – Final grades will be calculated as follows:

Assessments	Points	Due Date
Problem sets and individual lab assignments	65	Throughout term
Midterm	15	Week 8: October 12-18
Final	20	December 4 and 7-9
Total	100	

Letter Grade Scale: A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; F = below 60%.

COURSE SCHEDULE AND ASSIGNMENTS

DATE	TOPIC	ASSIGNED READINGS/ASSIGNMENTS
WEEK 1 Aug 24-30	Introduction	Merrill, Chapter 1
WEEK 2 Aug 31-Sep 6	Data and Descriptive Measures	<i>Merrill, Chapter 2</i>
WEEK 3 Sep 7-13	Standardizing Rates	<i>Merrill, Chapter 3; Labor Day holiday Sep 7</i>
WEEK 4 Sep 14-20	Describing Data with Graphs	<i>Merrill, Chapter 4; SPSS</i>
WEEK 5 Sep 21-27	Life Tables	<i>Merrill, Chapter 5</i>
WEEK 6 Sep 28-Oct 4	Probability	<i>Merrill, Chapter 6</i>
WEEK 7 Oct 5-11	Random Variables and Probability Distributions	Merrill, Chapter 7; SPSS
WEEK 8 Oct 12-18	Midterm Review and Examination	<i>Chapters 1-7; official mid-term date Oct 19</i>

DATE	TOPIC	ASSIGNED READINGS/ASSIGNMENTS
WEEK 9 Oct 19-25	Estimation and Hypothesis Testing	Merrill, Chapter 8; SPSS
WEEK 10 Oct 26-Nov 1	Sample Size	<i>Merrill, Chapter 9</i>
WEEK 11 Nov 2-8	Study Designs	Merrill, Chapter 10
WEEK 12 Nov 9-15	Statistical Measures of Association Among Variables	Merrill, Chapter 11; SPSS
WEEK 13 Nov 16-22	Experimental Studies	<i>Merrill, Chapter 12</i>
WEEK 14 Nov 23-29	Survival Analysis	<i>Merrill, Chapter 13; Thanksgiving holiday Nov 25-27</i>
WEEK 15 Nov 30-Dec 2	Cause and Effect	<i>Merrill, Chapter 14; last class day Dec 2</i>
WEEK 16 Dec 3-9	Dead Day and Final Examination	<i>Dead Day Dec 3; final exam Dec 4 and Dec 7-9</i>

UNIVERSITY POLICIES AND STUDENT SUPPORT

Generative Artificial Intelligence (AI) and Data Privacy - Required University Statement

The University does not recommend or endorse any specific AI tools or resources. Students should be aware that many generative AI tools (e.g., ChatGPT, Google Gemini, Microsoft Copilot) store user input and may use this data to train future models. For this reason, students should never upload or share personal, confidential, or identifiable information - such as names, ID numbers, health data, or assignment submissions containing such details - into any generative AI platform. When using AI tools, students should verify whether the tool complies with student privacy standards as indicated by the University. Faculty may recommend specific tools that better align with institutional data privacy policies, but ultimate responsibility for data protection rests with users. Students are encouraged to use faculty-recommended platforms when engaging in coursework involving generative AI. The University is not liable for any adverse experience or impact when students interact with these tools.

Course-Specific Generative AI Policy

Generative AI tools may be used only when explicitly authorized in the instructions for a particular assignment. Unless such permission is provided, all submitted analyses, interpretations, SPSS output or syntax, written responses, quizzes, and examinations must be completed by the student without generative AI assistance. Any permitted AI use must be clearly acknowledged and documented as directed by the instructor. Generative AI may not be used during the midterm or final examination. Unauthorized or unacknowledged use will be treated as an academic-integrity violation.

SRSU Accessibility Services - Required ADA Statement

Sul Ross State University (SRSU) is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. To help protect confidentiality, students seeking accessibility/accommodation(s) services must submit the Accommodation Request Form located on the SRSU Accessibility Services website. Students are welcome to call the Office of Accessibility Services at 432-837-8203 or stop by Ferguson Hall Room 112 if they have any additional questions regarding the process. The mailing address is PO Box C-122, Alpine, TX 79832.

Student Responsibilities - Required Statement

All full-time and part-time students are responsible for familiarizing themselves with the Student Handbook and the Undergraduate & Graduate Catalog and for abiding by University rules and regulations. Additionally, students are responsible for checking their Sul Ross email as an official form of communication from the University. Every student is expected to obey all federal, state, and local laws and is expected to familiarize themselves with the requirements of such laws.

SRSU Distance Education Statement - Required

Students enrolled in distance education courses have equal access to the University's academic support services, such as library resources, online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires a secure login. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the Student Handbook. Students in web-based courses must maintain appropriate equipment and software according to the needs and requirements of the course. Directions for filing a student complaint are located in the Student Handbook.

Academic Integrity

Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. Students must submit their own work and must not reuse work from another course without permission, submit another person's work as their own, copy professional or internet sources without citation, or collaborate on an assignment, quiz, or examination when collaboration is prohibited. Students must not use generative AI unless permission is expressly given. Violations may result in failure of an assignment, failure of the course, and/or additional University consequences.

Title IX and Notice of Non-Discrimination

Sul Ross State University complies with Title IX of the Education Amendments of 1972, which prohibits discrimination on the basis of sex in educational programs or activities, and with the Texas State University System Sexual Misconduct Policy. Reports or questions may be directed to the Title IX Coordinator, Alec Hershberger, University Center Room 211, 432-837-8262, titleix@sulross.edu. Sexual Misconduct resources and reporting information are available on the SRSU Title IX website.

Classroom Climate of Respect

This course supports free expression, critical investigation, and open discussion of ideas. All members of the course must help sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Students are expected to probe, oppose, and disagree without intimidation, harassment, discrimination, or personal attack.

Counseling and Wellness Support

Sul Ross students have access to TimelyCare, including nine free counseling sessions and 24/7/365 support. Counseling and Accessibility Services also offers in-person counseling in Ferguson Hall Room 112 on the Alpine campus and telehealth sessions for remote and SRSU International students.

Library Resources

The Bryan Wildenthal Memorial Library and Archives of the Big Bend provides free resources and services to the SRSU community. Off-campus access to online resources requires a LoboID and password. Librarians can be reached at srsulibrary@sulross.edu or 432-837-8123. Additional services include InterLibrary Loan, ScanIt, Direct Mail, and TexShare access.

Tutoring Services

The Lobo Den Tutoring Center offers free tutoring in writing, mathematics, science, and other subjects, with drop-in and scheduled appointments. Tutor.com provides free 24/7 online tutoring in more than 200 subjects and is available through Blackboard. For Lobo Den information, email tutoring@sulross.edu or call 432-837-8726.

Program Student Learning Outcomes and Marketable Skills

Sul Ross syllabi for courses aligned with a specific degree program must include the applicable program Student Learning Outcomes and THECB marketable skills. Because the source syllabus does not identify the official Sul Ross course number or degree-program alignment, the department should insert the approved program-specific statements here before the syllabus is posted.