

Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

Semester: Spring

Year: 2025

Course Prefix: STAT

Course and Section #: 4000-001

Course Title: Mathematical Statistics II

Credits: 3

Course Description

Is a continuation of STAT 4710. Includes estimation, sufficiency, completeness, hypothesis testing, statistical inference with the normal distribution, and Bayesian statistics.

Course Attributes

This course has the following attributes:

- General Education Requirements
- Global/Intercultural Graduation Requirements
- Writing Enriched Graduation Requirements
- Discipline Core Requirements in Program
- Elective Core Requirements in Program
- Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Dr. Erik Heiny

Student Learning Outcomes

Upon successful completion of this course, students will be able to understand and answer qualitative and quantitative questions in the following topics:

1. Compute maximum likelihood estimators.
 2. Find and derive complete and sufficient statistics.
 3. Derive uniformly most powerful tests and generalized likelihood ratio tests.
 4. Demonstrate proficiency in statistical inference using the normal distribution.
 5. Demonstrate proficiency in Bayesian estimation.
 6. Perform hypothesis tests without parametric assumptions.
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Course Materials and Texts

1. Mathematical Statistics with Applications by Wackerly, Mendenhall, and Scheaffer (7th edition).
 2. Internet access
 3. Scientific calculator
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Course Requirements

Course Assignments, Assessments, and Grading Policy

- Weekly chapter homework assignments (5% of overall grade)
 - Weekly quizzes (15% of overall grade)
 - Three Midterm exams (55% of overall grade)
 - Final Exam (25% of overall grade)
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Required or Recommended Reading Assignments

- Mathematical Statistics with Applications by Wackerly, Mendenhall, and Scheaffer (7th edition) – Ch. 6 – 11, 14
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General Description of the Subject Matter of Each Lecture or Discussion

- Chapter 6: Joint transformations and order statistics
- Chapter 7: Sampling distributions and the central limit theorem
- Chapter 8: Estimation
- Exam 1: Chapters 6 – 8
- Chapter 9: Properties of point estimators and methods of estimation
- Chapter 10: Hypothesis testing
- Exam 2: Chapters 9, 10
- Chapter 11: Linear models and estimation by least squares
- Chapter 14: Nonparametric statistics
- Exam 3: Chapters 11, 14
- Final Exam: cumulative

The Final grade percentage is rounded to the nearest percent and assigned the corresponding letter grade:

A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	below 60%

Required Course Syllabus Statements

Generative AI

You may use AI as a supplemental resource on your homework assignments. Keep in mind that worked out solutions are already provided for your homework assignments, and I am not grading them for correctness, but rather just making sure that you are attempting the problems. If AI helps increase your understanding while

studying, then by all means use it. However, **YOU WILL NOT BE PERMITTED TO USE AI TOOLS ON QUIZZES OR EXAMS!** In summary, you may use AI while studying if you find it helpful, but you will have to be able to solve the problems on your own on quizzes and exams.

Using Remote Testing Software

This course does not use remote testing software.

This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.