

Course Info



RIO SALADO COLLEGE

A MARICOPA COMMUNITY COLLEGE

Elements of Statistics

MAT206 16708 Fall 2024

Start Date: Sep 16, 2024

End Date: May 23, 2025

Credits: 3

Modality: In Person

Instructor Information

Name: Steven Felling B.S.E.E., M.Ed.

Contact Information:

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Phone: 480-706-7900 x70556

Location: C-105

Office Hours: 3:20pm-4:20pm

Website: www.mrfelling.com

Course Competencies

Official Course Description

Basic concepts and applications of statistics, including data description, estimation and hypothesis tests.

Official Course Prerequisites

Prerequisites: A grade of C or better in MAT14+, or MAT15+, or MAT187, or equivalent, or an appropriate District placement, or permission of Department/Division Chair.

Official Course Competencies

1. Identify the difference between descriptive and inferential statistics. (I)
2. Distinguish between a population and a sample. (II)
3. Group a set of data and present the grouping in graphical form. (II)
4. Determine the mean, median, mode and standard deviation of data set and find the z-score for a data piece. (III)
5. Define random variable and the probability distribution of a random variable. (IV)
6. Find probabilities for normal random variables by using the standard normal distribution. (V)
7. Construct random samples. (VI)
8. Graph the sampling distribution of the mean for all sample sizes and all populations. (VI)
9. Find point and interval estimates of population means and proportions. (VII)
10. Describe the logic of hypothesis testing emphasizing the role of probability distributions and types of error. (VIII)
11. Perform inferences about one mean or proportion in the case of normal populations or large sample size. (VIII)
12. Perform inferences about two means or proportions in the case of normal populations or large sample size. (IX)
13. Use the Chi-square goodness-of-fit test to determine if two populations have the same shape. (X)
14. Use the Chi-square independence test to determine whether two characteristics of a population are associated (dependent). (X)
15. Identify the best-fitting regression line for a set of data points. (XI)
16. Partition the total sum of squares for a set of data points to find measures of regression line fit and linear relationship. (XI)

Course Materials

Required Course Materials

Title	Edition	Author	ISBN
Graphing Calculator TI-83 or TI-84			
Stats: Modeling the World	3rd	David E. Bock, Paul F. Velleman, Richard D. De Veaux.	9780321570444

Standards and Expectations

This dual enrollment course follows a college-level curriculum. High school policies may differ from the policies that apply to dual credit.

Time Requirement

You will need to dedicate significant time to this college course. For each credit hour, plan to spend at least two hours a week on homework in addition to class presentation time.

Course Calendar

Weeks	Lessons
1	Course introduction
2	Unit 1: - Statistics and display of 1-variable categorical data. * Ch3 quiz (statistics and display of 1-variable categorical data).
3	Unit 1: Statistics and display of 1-variable numerical data.
4	Unit 1: * Ch4/5 quiz (statistics and display of 1-variable numerical data), - Normal distributions
5	Unit 1: -Normal distributions, * Ch6 quiz (normal distributions)
6	** Unit 1 Test (Statistics and display of 1-variable data) Unit 2: Exploring 2-variable data (display, correlation, LSRLs, straightening data)
7	Unit 2: - Exploring 2-variable data * Ch7/8/9 Quiz (LSRLs, scatterplots, residual plots, correlation)
8	Unit 2: Data straightening
9	Unit 2: * Ch10 quiz (straightening non-linear data) - Unit 2 review
10	** Unit 2 test (Exploring 2-variable data) - Unit 3: Simulating data using randomness
School Break	
11	Unit 3: Sampling techniques and biases
12	Unit 3: - Experiment design vs. observational studies * Ch11,12,13 quiz (simulating data using randomness, understanding sampling techniques and biases, experiment design vs. observational studies) - Unit 3 review
13	- Unit 3 review ** Unit 3 Test (Collecting data)
14	Unit 4: Probability - Probability foundations (conditional probability, combining AND/OR events, independent vs. disjoint events)

Unit 4:

- review Ch14/15
- 15
- * Ch14/15 Quiz (Probability foundations)
 - Transforming random variable distributions

Unit 4:

- 16
- Transforming and combining random variable distributions,
 - Binomial and Geometric probability models

Unit 4:

- 17
- Ch16/17 review
 - * Ch16/17 Quiz (transforming and combining random variable distributions, Binomial and Geometry models)

Unit 4:

- 18
- Unit 4 review
 - ** Unit 4 Test (Probability)

19 **Review and Semester Final Exam - Free-Response Questions

20 **Review and Semester Final Exam - Multiple-Choice Questions

School
Break

Unit 5:

- 21
- Sampling distributions and introduction to the concept of inferential statistical analysis

Unit 5:

- 22
- Review Ch18
 - * Ch18 Quiz (Sampling distributions for proportions and means)
 - Confidence Intervals for 1 sample proportions cases

Unit 5:

- 23
- Confidence Intervals for 1 sample proportions cases
 - Hypothesis tests for 1 sample proportions cases

Unit 5:

- 24
- Ch19/20 review
 - * Ch19/20 Quiz (Confidence intervals and hypothesis tests for 1 sample proportions cases)
 - Type I/II Errors and Power of the Test

Unit 5:

- 25
- Inference for 2 independent sample proportion cases
 - * Ch21/22 Quiz (Type I/II Errors, Power of the Test, Inference for 2 sample proportion cases)

Unit 5:

- 26
- Unit 5 review
 - ** Unit 5 Test (Sampling Distributions, Inferential Statistics for 1 and 2 sample proportions data cases)

Unit 6:

- 27
- Inference for 1-sample means cases

Unit 6:

28 - Inference for 2-sample independent means vs. matched-pairs means cases
** Ch24/25 Quiz (inference for 2-sample independent means vs matched-pairs means cases)

Unit 6:

29 - Unit 6 review
** Unit 6 Test (Inference for means cases)

School
Break

Unit 7:

30 -Inference for slope of LSRLs

Unit 7:

31 * Ch27 Quiz (inference for slope of LSRLs)
- Chi-Squared Analysis

* Ch26 Quiz (Chi-Squared Analysis)

32 - Unit 7 review

** Unit 7 Test (Inference for slope of LSRLs, and Chi-Squared Analysis)

--Review, AP and Course Semester Final Exams

During this time at the end of the course, we do an intensive review of the entire course, emphasizing using topics from throughout the course together to solve more complex problems and preparing students for the AP Exam.

33-39

There are a number of small assessments of various kinds - to some extent these are based upon what we are seeing during the review. Many are based upon working AP Statistics Exam past year problems. We do always include the following assessments, though:

** Week 34: A multiple-choice question quiz

**Week 37: A free-response question course final exam

** Week 38: A multiple-choice question course final exam

Grading Standards

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	Below 60%

Attendance Standards

Regular Attendance is important. Students are allowed 10 absences (excused or unexcused) per semester for in-person instruction. The 11th total absence may result in loss of credit unless there are extenuating circumstances. School related absences do not count toward your student's total absences. For more information refer to the [Desert Vista Attendance Policy](#).

Be prepared to take missed tests/quizzes immediately upon your return to class unless you have made prior arrangements with the instructor.

Late Policy

All assigned work must be completed by designated due dates as stated in chapter assignment calendar.

*All tests must be taken as scheduled unless **PRIOR** arrangements have been made (contact can be made in person or via email).*

Equipment Use Policy

You may be assigned a computer for classroom use. You are to only use the computer in the designated websites. You are not to add or make any changes to the computer. Failure to abide by these policies will cause you to lose your computer privileges.

College Policies

Extra Credit Policy:

There are no extra-credit assignments for this class. The scheduled assignments and exams are sufficient to test understanding of the materials presented in the course.

Academic Misconduct:

Academic Misconduct includes cheating, conspiring to cheat, soliciting to cheat, attempting to cheat, plagiarism, fabrication on an assignment, or other forms of dishonest presentation.

Posting assessments on an unauthorized web site, soliciting assessment answers and the unauthorized acquisition of assessments, assessment answers, or other academic material is cheating. Unless approved by the instructor, turning in content created by essay generators or other types of artificial intelligence platforms is also academic misconduct.

Plagiarism includes, but is not limited to, the use of paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling or sharing of term papers or other academic materials. Information gathered from the Internet and not properly identified is also considered plagiarism.

We expect every student to produce his/her original, independent work. Any student whose work indicates a violation of the [MCCCD Academic Misconduct Policy](#) (including cheating and plagiarism) can expect sanctions as specified in the college catalog.

Rio Salado College uses software that uncovers plagiarism from student to student and other data sources on the Internet. If a student is found to have plagiarized content, grade consequences will be applied in accordance with departmental policies.

Civility Policy:

The faculty of Rio Salado place a high value on the importance of general ethical standards of academic behavior and expect that communication between students and instructors or among students shall maintain the level of formality and mutual respect appropriate to any college teaching/learning situation. Language or behavior that is rude, abusive, profane, disruptive, or threatening will not be tolerated. Activity of this type is Academic Misconduct as defined in MCCCD Policy AR 2.3.11. Student engaging in such behavior will be removed from the course with a failing grade. Additional sanctions may be applied pursuant to AR 2.3.11.

Refund Policy:

Refunds are not automatic. Students who drop courses within the refund period are eligible for a reimbursement of appropriate tuition. Deadlines and details are available online at <http://www.riosalado.edu/cashier/Pages/refund.aspx>.

Classroom Accommodations for Students with Disabilities

In accordance with the Americans with Disabilities Act, the Maricopa County Community College District (MCCCD) and its associated colleges are committed to providing equitable access to learning opportunities to students with documented disabilities (e.g. mental health, attentional, learning, chronic health, sensory, or physical). Please work with your high school accommodations team to provide approved and appropriate accommodations in dual enrollment courses. For more information please feel free to reach out to the college's disability services at 480-517-8562 or Disability.Services@riosalado.edu

Addressing Incidents of Sexual Harassment/Assault, Dating/Domestic Violence, and Stalking

In accordance with Title IX of the Education Amendments of 1972, MCCCD prohibits unlawful sex discrimination against any participant in its education programs or activities. The District also prohibits sexual harassment—including sexual violence—committed by or against students, District employees, and visitors to campus. As outlined in District policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by District policy. Visit <https://district.maricopa.edu/mandatory-drs-title-ix-syllabus-statements> for more information.

Tuition Assistance

Tuition Assistance is available to students enrolled in a Rio Salado College dual enrollment courses who demonstrate financial need. Details are available online at <http://www.riosalado.edu/dual/>

Student Responsibility

In addition to being responsible for the information outlined in this syllabus, students are responsible for familiarizing themselves with the Rio Salado College policies in the college catalog and student handbook, which are available online at <https://www.riosalado.edu/student-resources/student-solution-center/student-policies>

Disclaimer

Course content and syllabus may vary from the course calendar listed above in order to meet the needs of the particular group in this course section.

Change of Address

Please notify Admissions, Records and Registration at (480) 517-8540 of any changes in contact information or log into your Student Center to update your address.