Name: Kent Riggs, Ph.D.
Department: Mathematics and Statistics
Email: riggske@sfasu.edu
Phone: 468-6263
Office: 350 NM
Office Hours: MW at 9-11:30 or by appointment
Class meeting time and place: Online

Course Description:
Probability, statistical inference, rank tests, chi-square tests, linear regression and correlation, analysis of variance, multiple regression.

Text and Materials:
An Introduction to Statistical Methods and Data Analysis by Ott and Longnecker, 6th Ed.

Course Requirements:
Homework and Exams

Course outline: Approximate time spent
Descriptive Statistics 5%
  o Graphical Methods
  o Measures of Central Tendency
  o Measures of Variability

Probability 15%
  o Probability Laws
  o Conditional Probability and Independence
  o Probability Distributions for Random Variables:
    ♣ Discrete
    ♠ Continuous
  o Random Sampling
  o Sampling Distributions

Statistical Inference (Estimation and Hypothesis Tests) 15%
  o Inferences about a single population parameter
  o Inference comparing parameters of two populations

Statistical Inference Comparing Parameters for More Than Two Populations 25%
  o Analysis of Variance (ANOVA)
  o Kruskal-Wallis Test

Multiple Comparisons 10%
  o Fisher's Least Significant Difference Test
  o Tukey's Test
  o Student-Newman-Keuls Test
  o Duncan's Test
  o Dunnett's Test
  o Scheffe's Test

Chi-Square Tests 10%
  o Goodness-of-Fit Test
Tests for Independence and Homogeneity

Regression
- Correlation and Simple Linear Regression
- Multiple Regression

Grading Policy: The final average will be computed using the following weights:

- Exam I: 25%
- Exam II: 25%
- Exam III: 25%
- Final Exam: 25%

Exam I, Exam II, Exam III, and the Final Exam are paper exams and must be taken in a proctored location. The dates and times of the exams are listed on the “Semester Calendar”.

Attendance Policy:
Participation is expected.

Academic Integrity (A-9.1):
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Withheld Grades Semester Grades Policy (A-54):
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Students with Disabilities:
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).

**Acceptable Student Behavior**

Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.
Course description: Probability, statistical inference, rank tests, chi-square tests, linear regression and correlation, analysis of variance, multiple regression.

Credit hours: 3

The following is an excerpt from SFA Policy 5.4:

The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;

2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend a minimum of two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.

Course Prerequisites and Corequisites: MATH 1342 or equivalent

Course outline:

- Descriptive Statistics
  - Graphical Methods
  - Measures of Central Tendency
  - Measures of Variability
  - 5%

- Probability
  - Probability Laws
  - Conditional Probability and Independence
  - Probability Distributions for Random Variables:
    - Discrete
    - Continuous
  - Random Sampling
  - Sampling Distributions
  - 15%

- Statistical Inference (Estimation and Hypothesis Tests)
  - Inferences about a single population parameter
  - Inference comparing parameters of two populations
  - 15%

- Statistical Inference Comparing Parameters for More Than Two Populations
  - Analysis of Variance (ANOVA)
  - Kruskal-Wallis Test
  - 25%

- Multiple Comparisons
  - Fisher's Least Significant Difference Test
  - Tukey's Test
  - 10%
Student-Newman-Keuls Test
  - Duncan's Test
  - Dunnett's Test
  - Scheffe's Test

- **Chi-Square Tests** 10%
  - Goodness-of-Fit Test
  - Tests for Independence and Homogeneity

- **Regression** 20%
  - Correlation and Simple Linear Regression
  - Multiple Regression

**Student Learning Outcomes (SLO):** At the end of STAT 5340, a student who has studied and learned the material should be able to:

1. Solve problems encountered in research projects and make decisions based on data and life experiences beyond the classroom and university setting. [PLO: 1,2,3]
2. Investigate the nature of independence and/or dependence among several variables. [PLO: 1,2,3]
3. Formulate statistical hypotheses in terms of the parameters of populations. [PLO: 1,2,3]
4. Test hypotheses using appropriate test statistics. [PLO: 1,2,3]

**Program Learning Outcomes (PLO):** Students graduating from SFA with a M.S. Mathematical Sciences Degree will:

1. Written Communication - SFA Mathematics majors communicate mathematical ideas effectively in written form, integrating mathematical notation correctly and consistently.
2. Verbal Communication - SFA Mathematics majors communicate mathematics effectively to diverse audiences.
3. Mathematical Maturation - SFA Mathematics majors grow from a computational understanding of mathematics to an integrated approach which includes critical thinking proficiency, computational facility, conceptual understanding, and problem-solving persistence.

**Academic Integrity**
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

The penalty for a student found cheating on any part of an assignment, quiz, or exam in this class will range from a grade of zero on the work to a grade of F in the course, and may result in additional, more severe disciplinary measures. A student who allows another to copy his work and the student copying the work are both guilty of cheating. Do your own work. Do not show your completed work to others. Do not allow others to copy your work.

**Definition of Academic Dishonesty (SFA policy 4.1):**
Academic dishonesty includes both cheating and plagiarism. Cheating includes, but is not limited to:
- using or attempting to use unauthorized materials on any class assignment or exam;
- falsifying or inventing of any information, including citations, on an assignment;
- helping or attempting to help other student(s) in an act of cheating or plagiarism.

Plagiarism is presenting the words or ideas of another person as if they were one’s own. Examples of plagiarism include, but are not limited to:
- submitting an assignment as one’s own work when it is at least partly the work of another person;
- submitting a work that has been purchased or otherwise obtained from the Internet or another source;
- incorporating the words or ideas of an author into one’s paper or presentation without giving the author credit.

**Withheld Grades Semester Grades (SFA Policy 5.5)**
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for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

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**SFASU Mental Health Statement:** SFASU values students’ mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students mental health and wellness. Many of these resources are free, and all of them are confidential.

**On-campus Resources:**
SFASU Counseling Services
[www.sfasu.edu/counselingservices](http://www.sfasu.edu/counselingservices)
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
[www.sfasu.edu/humanservices/139.asp](http://www.sfasu.edu/humanservices/139.asp)
Human Services Room 202
936-468-1041

**Crisis Resources:**
Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741

**Acceptable Student Behavior**
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the [Student Conduct Code, policy 10.4](http://www.sfasu.edu)). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

*Date of document: 08/17/2021*