Instructor: Jacob Turner, Ph.D.
Department: Mathematics and Statistics
Email: turnerja2@sfasu.edu
Phone: 936-468-1692
Office: 342 NM
Office Hours:

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-1050</td>
<td>2-3</td>
<td>10-1050</td>
<td>2-3</td>
<td>10-1050</td>
</tr>
<tr>
<td>1-3</td>
<td></td>
<td>1-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Class meeting time and place: 11:00 am – 11:50 am, MWF, Mathematics 214

Text and Materials:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TI-83 Calculator</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Course Details:

Course Objectives:
To familiarize the student with core mathematical underpinnings of statistical inference and estimation while retaining an emphasis on making analytical decisions with real world data. This includes the mastery of joint densities, covariance and correlation, transformations, sampling distributions, development and data analysis concerning: one/two/many sample location tests and confidence intervals. Analysis of variance and simple linear regression, chi-square tests for categorical data. I will bring in some statistical software such as R or JMP occasionally to emphasize certain topics/concepts as needed.

Course outline (approximate time spent)

Covariance and Correlation 20%
- Introduction to multiple random variables and independence
- Joint, marginal and conditional distributions
- Properties of the sample mean and variance
- Calculation and interpretation of correlation and covariance
- Moment generating functions continued
- Transformation of random variables

Sampling and Sampling Distributions 15%
- Central Limit Theorem
- Properties of Normal, t, chi-squared, and F distributions

The Need for Estimation and Testing: 15%
- Use of experimental conditions in order to identify a parametric family
- Maximum Likelihood Estimation
- Various properties of Estimators
- Building Confidence Intervals
**Elements of Testing Hypotheses** 15%
- terminology associated with testing
- likelihood ratio tests

**The Popular One Sample Location Tests and Confidence Intervals** 10%
- mathematical development of one sample t and z tests (and associated confidence intervals)
- paired data as a one-sample problem
- Testing for the variance

**The Popular Two Sample Location Tests and Confidence Intervals** 10%
- mathematical development of the two-sample independent t-test (and associated confidence interval)
- analysis of data for two-sample independent t-test procedures

**One Way Analysis of Variance & Simple Linear Regression** 15%
- mathematical development & application
- analysis of data and computer application for ANOVA and regression procedures
- multiple comparisons in ANOVA, residual analysis in Regression including data analysis and computing/software usage

**Categorical Data**
- Chi-squared goodness-of-fit test
- Tests for Independence/Row Homogeneity for Two Categorical Variables
- Analysis of data and computer application for categorical data procedures

**Time Permitted**

**Grading:** The final average will be computed using the following weights:
- Regularly Assigned Homework 20%
- Midterm 1 20%
- Midterm 2 20%
- Midterm 3 20%
- Final Exam 20%

**Homework**
Each day in class there will be a few homework problems from the book given out that are for your practice. The total number of problems assigned works out to no more than one per calendar day (seven per week). You should keep all of the homework organized in one place and separate from the place where you keep notes from class. Each problem must be started on a separate piece of paper. Do not work two or more problems on the same page. Be prepared to turn in any of the assigned problems at any point one week after they are assigned.

How Daily Work is Assessed: Each class meeting of the semester (after the first day) you will be responsible for turning in one or two homework problems. The homework MUST be turned in when asked at the beginning of the class period. NO EXCEPTIONS. Homework is NOT accepted at the end of class or later in the day. Do not ask to turn in homework at that time. There will not be a homework pickup the day after an exam.

This should sum up to around 18 to 25 homework assignments. Once homework problems have been assigned for a week, they can be called for at any time – even much later in the semester. That is, a problem assigned on September 13 could be asked to be turned in on September 20 or November 22, etc.

**Exams:**
Three in-class exams are tentatively scheduled for Fridays during the 4th, 8th, and 12th week of the semester. I reserve the right to move the exams outside of our normal class time slot. If I exercise this right, 1. You will have weeks of advanced notice and 2. You will take the exam at a specific time that you sign up for on exam day.
Final Exam
The final exam is comprehensive and counts 20% toward the final grade. The final exam schedule is 10:30 a.m. - 12:30 p.m., Wednesday, May 9, 2018.

Grading Scale:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>% Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>below 59</td>
</tr>
</tbody>
</table>

Expectations and Class Rules:
ALL cell phones are to be turned OFF and put away. If someone violates this rule (texting, playing games, etc.), then the person must leave the classroom for that class period without any further delay according to the professor’s instructions. No food in the classroom. Don’t leave the classroom in the middle of the lecture.

Attendance Policy:
Be on time. There is no need for an attendance policy in advanced mathematics courses. They are self-regulating.

Formalities Which Must Be Included in This Document:

Academic Integrity (A-9.1)

The penalty for violating Academic Integrity policy A-9.1 at any time during this semester is failure of the course. No exceptions. No grade will be calculated for a student who violates the policy. They will be asked to sign an academic dishonesty form after evidence of their violation has been provided to them and they will receive an F in the course no matter what grades have been accumulated to that point in the semester.

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/)