

ANSC 5322 – Statistics for the Animal Sciences Course Syllabus - Fall 2021

Instructor

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Office Hours: M, W, F | 1:00-2:00 | RAS 113 (and virtual)
Tue, Thu | 9:00-12:00 and 2:00-3:00 | FH 204 (and virtual)
Appointments (face-to-face or virtual) can always be made via e-mail or text.
I also have "Open Door Office Hours". Feel free to come in anytime you see me in my office.

Teaching Assistant

Name: Kelsey Wogan
Office: RAS 118, WSB Herbarium
Office Hours: Tue-Fri 3:30-5:00 (Kelsey has "open door office hours" as well)
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Course Description

This course emphasizes statistical literacy, use of real data and technology, statistical conceptual understanding, and active learning.

Enhanced Course Description

H. G. Wells argued that "statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write." Due to its importance to the everyday person, some (e.g. Arthur Benjamin) are currently advocating for courses in statistics to replace algebra courses in high school.

Statistical proficiency is even more important to the scientist, as good science employs statistical knowledge in *every* step of the scientific method. Statistics is *the* tool used to discern truth from fiction, and science is all about finding the truth. Statistics is so fundamental to sound science, that Karl Pearson described statistics as the "grammar of science." Whether you go on to be a technician, a researcher, a manager, or a professor, the knowledge you gain in this course will be critical to your success.

In the short term, statistical knowledge will inform most decisions you make in each stage of your graduate research, and will in large part affect the success of your research. Then you will be going to job interviews, where a chief complaint from hiring managers of new hires concerns their lack of statistical ability. So please take this course very seriously. Your graduate committee and future employers *will* want to know if you know your statistics!

Let's be frank. Statistics can be an intimidating subject. My promise is to *walk with you every step of the way*. I have been teaching graduate statistics and helping students with their research at Sul Ross since 2015. Prior to coming to Sul Ross, I had 20-years of experience applying statistical principles as an aerospace engineer at NASA for our nation's human spaceflight programs. Life then brought me to West Texas, and I could not be happier. I LOVE teaching statistics, and plan to help each of you become statistically competent by the end of this semester.

Now, let's go delve in and tackle some statistics!

Objectives and Outline

Course Objectives

At the completion of the course, the learner will be able to:

1. Discuss the importance of the application of statistics in the agricultural and life sciences.
2. Identify parametric and nonparametric tests, descriptive statistics, and inferential statistics.
3. List the basic assumptions involved in statistical methods.
4. Solve basic statistical tests.
5. Interpret statistical results.

Course Outline (Numbers given are the associated chapters in the textbook)

- | | |
|--|---|
| 1. Statistics and Problem Solving | 9. Samples and Sampling Distributions |
| 2. Data, Reality, and Problem Solving | 10. Estimation: Single Samples |
| 3. Visualizing Data | 11. Hypothesis Testing: Single Samples |
| 4. Describing and Summarizing Data from One Variable | 12. Inferences about Two Samples |
| 5. Discovering Relationships | 13. Regression, Inference, and Model Building |
| 6. Probability, Randomness, and Uncertainty | 14. Multiple Regression |
| 7. Discrete Probability Distributions | 15. Analysis of Variance (ANOVA) |
| 8. Continuous Probability Distributions | 16. Looking for Relationships in Qualitative Data |
| | 17. Nonparametric Tests |

ANSC Student Learning Objectives

Student will demonstrate that he/she is able to:

1. Apply statistical concepts and procedures to animal science data.
2. Evaluate literature and references as they apply to the animal science field.
3. Demonstrate their knowledge of the fundamentals and advanced concepts relating to animal science.

ANSC Marketable Skills, MS

Students will acquire these marketable skills:

1. Students develop data collection and analysis skills using Excel, R, and SAS programs,
2. Students develop proficiency in analytical lab procedures, project organization, scientific writing,
3. Students can effectively disseminate information to a variety of target audiences using oral and written methods.

Logistics / Materials

Class Meeting Time/Place

This is an entirely web-delivered course. Readings from the course text replace formal lecture. Blackboard will be used for all e-mail communications, announcements, discussion board communication, reading assignments, and as the official gradebook for the course. Hawkes Learning will house homework assignments and online exams. Hawkes also comes with an e-copy of the course textbook.

Text and Supplies

1. Hawkes Online Software Access Code (online learning system plus an e-book of Item #2) (**Required**)
2. Hawkes, J. S. (2019). *Discovering Statistics and Data* (3rd ed.). Mount Pleasant, SC. Hawkes Learning / Quant Systems.
 - An electronic version (e-book) is **required** (and is automatically included with Item 1 above). A physical hardcopy is optional but encouraged. See “Bundle Options” below for more information.
3. Statistics-capable calculator (**required**)

NOTES:

- **Regarding Items 1 and 2:** When you go to the SRSU bookstore website, you will see two items listed for this course. Both are actually “bundles” of multiple items. The first bundle is labeled “Required Option 1”, and the other is labeled “Required Option 2”. **It is required that you purchase one bundle OR the other, BUT NOT BOTH!**
 - The “Required Option 1” bundle (ISBN 9781642770155) is Item #1 above, i.e. it includes an access code for the online software (<http://www.hawkeslearning.com/>) that we’ll be using in the course, AND electronic e-book access (via the Hawkes’ website) to the course text.
 - The “Required Option 2” bundle (ISBN 9781642770117) includes Item #1 AND #2 above, i.e. it adds an optional hardcopy of the course text to “Required Option 1”. The only reason to spend more for this bundle option is if you want a physical hardcopy of the course text in addition to the e-copy on the Hawkes Learning website.
 - You must have purchased online software access (a Hawkes license) by class time no later than the 3rd class day. **If you have not purchased your Hawkes access by the end of the second week of class, you will be dropped from this class with an “F.”**
 - For help with Hawkes access, please contact Hawkes Technical Support: M-F, 7:00 AM to 9:00 PM (Central Time), 843-571-2825, <http://support.hawkeslearning.com/supportcenter/>
- **Regarding Item 3: a statistics-capable calculator is REQUIRED** for the course. I recommend getting a TI-83, TI-83 Plus, TI-84, TI-84 Plus, or TI-84 CE. Silver editions are great (more memory, more tools) but definitely not necessary and not needed for this course. Many other calculators would work, but the book and website we will be using specifically has instructions for the TI-83/84 family of calculators. Some notes:
 - These can be expensive to buy new, so *the NRM department has available a limited supply of calculators that students can borrow for the semester, on a first-come-first-served basis.* Students must come in-person to the NRM department to check out a calculator, then return it at the end of the semester. Failure to return a borrowed calculator will result in a Hold being placed on your SRSU account until the calculator is returned, or the student has paid SRSU the cost of replacement for a new calculator.
 - If you cannot borrow an NRM calculator, then many students choose to buy used, which is a great option. It’s also possible to rent a calculator (if you go online and google “calculator rental” you’ll see several rental options).
 - Finally, the book and website we’ll be using also have instructions for Microsoft Excel, so it’s possible to complete the course using Excel, if you have access to that software.

Grading Information / Course Policies

Course Grade

Exam I	20%
Exam II	20%
Exam III	20%
Exam IV (Final Exam)	20%
Homework	20%

Grade Assignment

<60 = F, 60-69 = D, 70-79 = C, 80-89 = B, 90-100 = A.

Readings

The course and its material are organized by week. Each week has a reading assignment that explains that week's material. Weekly reading will consist of 25-50 pages of the text, plus occasional supplemental material. As we will not have formal lectures, *the readings are essential; completing 100% of the assigned readings is expected.*

Homework

The associated homework for each week's material is typically due the following Monday. On occasion, the weekly homework is split with some due the Friday of the week of the material, and the rest due the following Monday. See tentative schedule at the end of the syllabus; revisions to the schedule are expected and will be posted to Blackboard as they occur.

- Homework will be completed in Hawkes. It is considered completed when a 90% mastery level is achieved in the Hawkes certify mode for that lesson. A zero is earned if the mastery level of 90% is never reached in Hawkes Certify mode.
- If the 90% mastery level is achieved, and the homework is completed on time, a score of 100 is earned. However, students are highly encouraged to achieve 100% mastery in all lessons, as all lesson material is potential exam material.
- If the mastery level is achieved, but the homework is 0-1 days late, a score of 75 is earned.
- If the mastery level is achieved, but the homework is 1-2 days late, a score of 50 is earned.
- If the mastery level is achieved, but the homework is 2-3 days late, a score of 25 is earned.
- For 3 or more days late, the earned score will be zero, regardless of mastery level achieved.
- Therefore, the only possible homework scores are 0, 25, 50, 75, and 100.

Exams

Four exams will be due on Fridays during the course (see schedule).

- For any given exam, the last homework over covered material will be due earlier that week on Monday, with the exam posted that same Monday, giving each student Tuesday through Friday to complete the exam.
- Exams are not cumulative in the sense that Exam II does not test the material tested on Exam I, and Exam III does not test material tested on Exams I and II, etc.; however, concepts from throughout in the course will always be needed to complete every exam.
- The course must go on however, and readings for post-exam sections are also assigned during exam weeks. For exam weeks, students are encouraged to focus on completing the exams before moving on to the assigned readings for that week.
- Exams will be completed outside of class, online in Hawkes, *using a strict honor code* (see later).
- Mastery levels are not utilized for exams in Hawkes.
- Late exams will incur a 10%-per-day late penalty.
- Therefore, all scores between 0% and 100% are possible for exams.

Due Dates/Times/Extensions

All graded work, including exams, are expected to be on-time (11:59 pm central time on due date). **No due dates for ANY graded work, including exams, will be extended without PRIOR e-mail arrangements** initiated by the student, and only for valid reasons. **Before an accommodation (e.g. extended due date) can be granted for a**

COVID-related reason, students are required to first submit the SR COVID-19 Self Report form found at <https://srinfo.sulross.edu/covid-19/self-report/>.

Academic Integrity

Academic dishonesty hurts everyone and reduces the value of college degrees. Doing someone else's work, presenting the ideas and work of others as your own, submitting the same paper for multiple classes, and/or failing to cite your sources when you utilize the ideas of others, are all examples of academic dishonesty. It is your responsibility to read and understand the university's policy on academic dishonesty in the SRSU Student Handbook, as all violations will be taken seriously and handled through the appropriate university process. The Student Handbook can be found at: <https://www.sulross.edu/page/2454/student-handbook> (page 80). In addition, please note that plagiarism detection software will be used in this class for written assignments, as well as monitoring software for any online exams. **Any student shown to violate academic integrity will receive no credit (0) for work done and/or may be penalized in accordance with published University Rules.**

Communication

You are required to check your *Sul Ross e-mail and Blackboard announcements several times per week*. I do not use the personal or preferred e-mail addresses that you may have on record with the university.

Attendance - It is policy of this class to **drop a student with a grade of "F" if they fall more than two weeks behind in the assignments.**

General Expectations - Statistics can be a very intimidating subject. However, you cannot survive in the animal sciences without knowing statistics. To maximize learning in this course, we should have some expectations of each other:

I expect from you:

- ASK whenever something is unclear. Preferably in class, as it is likely that others have the same question. **THIS IS YOUR MOST IMPORTANT JOB!**
- PARTICIPATE in class.
- READ the required sections from the text. If you come to me with a question and it is clear that you haven't read the book or the lecture notes, I will direct you to the reading first.
- DO all assignments, do them in a timely manner.
- BE HONEST in all of your work.

What you can expect from me:

- GIVE 100% effort in teaching you the best I can.
- Make myself AVAILABLE to help outside of class.
- ANSWER all of your questions to the best of my knowledge; if I don't know the answer I will find out.
- Be FAIR in all grading.
- Provide you with timely, constructive FEEDBACK regarding your work.

Learning Environment, and Life

I aim to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, socioeconomic class, age, nationality, etc.). I also understand that the crisis of COVID, economic disparity, and health concerns, or even unexpected life events could impact the conditions necessary for you to succeed. My commitment is to be there for you and help you meet the learning objectives of this course. I do this to demonstrate my commitment to you and to the mission of Sul Ross State University to create an inclusive environment and care for the whole student as part of the Sul Ross Familia. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you.

Resources and Assistance

SRSU Library Services

The Bryan Wildenthal Memorial Library in Alpine offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, <https://library.sulross.edu/>. Off-campus access requires logging in with your LoboID and password. Librarians are a tremendous resource for coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

Tutoring

SRSU tutoring will be available shortly after the semester starts. Contact Anita Banegas (432-837-8992, abanegas@sulross.edu) or Mabel Garcia (432-837-8629, mag15bf@sulross.edu) to get information or to request an appointment.

Blackboard's Support Desk

If you have any technical issues with Blackboard itself, e.g. if you are having issues submitting a document, getting videos to play, or you are dealing with a technical error in the course, then the Blackboard Support Desk is ready to help you. The support desk is open 24 hours a day, 7 days a week. You can reach the support desk by calling **888-837-6055**, emailing blackboardsupport@sulross.edu, using resources from the Technology Support tab within Blackboard, or clicking the Support Desk graphic on the course homepage. As always, academic questions about course assignments, due dates, and general course questions should be directed to your instructor.

SRSU Disability Services

Sul Ross State University (SRSU) is committed to equal access in compliance with 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. Students seeking accessibility / accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and they will get back to you as soon as they can during working hours), or e-mail rebecca.wren@sulross.edu. The office is located on the first floor of Ferguson Hall (Suite 112), and the mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas, 79832.

SRSU Distance Education Statement

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 and Hawkes, which requires 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, as outlined on the SRSU website. Directions for filing a student complaint are located in the student handbook.

Tentative Course Schedule (Subject to Change)

Week #	Dates	Due Monday	Reading Assignment	Pages	Due Friday
1	08/23-08/27	-	1.6-1.8, 2.1-2.2	35	Start Here Module
2	08/30-09/03	Introductory Module & HW Ch 1	3.1-3.5	45	HW Ch 2
3	09/06-09/10	HW Ch 3 (Tue)	4.1-4.3	43	-
4	09/13-09/17	HW Ch 4	5.1-5.3	48	-
5	09/20-09/24	HW Ch 5	6.1-6.3	34	Exam 1 (Ch 1-5)
6	09/27-10/01	HW Ch 6	7.1-7.3, 8.1-8.4	45	HW Ch 7
7	10/04-10/08	HW Ch 8	9.1-9.3, 9.5, 10.1-10.2	41	HW Ch 9
8	10/11-10/15	HW Ch 10	11.1-11.3, 11.6	40	Exam 2 (Ch 6-10)
9	10/18-10/22	HW Ch 11	12.1-12.2	42	-
10	10/25-10/29	HW Ch 12	13.1-13.2	28	-
11	11/01-11/05	HW Ch 13	14.1-14.6	39	Exam 3 (Ch 11-13)
12	11/08-11/12	HW Ch 14	15.1-15.3	39	-
13	11/15-11/19	HW Ch 15	16.1-16.3	24	-
14	11/22-11/26	HW Ch 16	17.1-17.3, 17.6	31	-
15	11/29-12/03	HW Ch 17	N/A	0	Exam 4 (Ch 14-17)

Holidays

Mon	09/06	Labor Day holiday (no classes)
Wed-Fri	11/24-26	Thanksgiving Day holiday

Exam Schedule

Exam I (Chapters 1-5)	Friday, September 24 (tentative, due at 11:59 pm)
Exam II (Chapters 6-10)	Friday, October 15 (tentative, due at 11:59 pm)
Exam III (Chapters 11-13)	Friday, November 05 (tentative, due at 11:59 pm)
Final Exam (Chapters 14-17)	Friday, December 03 (due at 11:59 pm)