**STAT 1401: Elementary Statistics**

**Spring 2021**

**Instructor:** Dr. Kristin Lilly

**Office:** 211 University Hall

**Office Hours:** MW 11:00 AM – 12:00 PM, R 11:00 AM – 12:00 PM or by appointment. **All office hours are 100% online through Collaborate Ultra in CougarView.**

**E-mail:** [lilly\_kristin@columbusstate.edu](mailto:lilly_kristin@columbusstate.edu)

Please allow 24 hours for a response, excluding weekends and holidays.

**Phone**: (706) 507 – 8241

**Class:** MWF 10:00 AM – 10:50 AM in UH 248

**Class Delivery:** This class is designed as hybrid-flexible. Class will be delivered with students in one of the following three groups (look out for an email designating your group):

* 1. Face-to-face students on Monday; rest of week online asynchronously
* 2. Face-to-face students on Wednesday; rest of week online asynchronously
* 3. 100% online students asynchronously

**Instructor Statement:** I will do my best to continue face-to-face classes as permitted during this time. Classes may need to go online for up to two weeks if my childcare options are not available due to the COVID-19 pandemic. At that point, I may need to work from home, and you can continue the course online. You will be notified ASAP if this is the case.

**Text:** Illowsky, B. and Dean, S. (2016) *Introductory Statistics*. Open Stax College. ISBN-10: 1938168208 A free PDF is available at: <https://openstaxcollege.org/textbooks/introductory-statistics/get>. The book may also be purchased at the CSU Bookstore. A separate WebAssign access code must be purchased either from the bookstore or online from WebAssign. Please check your e-mail for instructions.

**Prerequisites:** Satisfactory score on math placement exam or completion of any of the following courses with a grade of ”C” or better: MATH 1001, MATH 1101, MATH 1111, MATH 1113, MATH 1125, or MATH 1131.

**Required Material:** Required materials include (1) the Open Stax textbook with WebAssign access, (2) access to a laptop or computer, and (3) the RStudio software package. You can either use your own personal laptop or check out a laptop from the Schwob Library. The OpenStax textbook and RStudio are available for free. WebAssign access can be purchased for $37.95 at webassign.net. RStudio requires the use of two software packages: R and RStudio (both are free). R can be downloaded from : <https://mirrors.nics.utk.edu/cran/> . RStudio can be downloaded at: <https://rstudio.com/products/rstudio/download/>

**Websites/Material to Access to be Successful in this Course:**

* OpenStax.org (Textbook)
* CougarView (Slides and Videos)
* WebAssign.net (Homework and Exams)
  + Class Key: **colstate 2041 2749**
* RStudio/R (Software and Calculator)

**Course Content:** Survey of modern statistical methods applicable to behavioral, biological, health and managerial sciences, and education. Organization and analysis of data, probability distributions, sampling distributions, point estimation, confidence interval, hypothesis testing, and regression analysis.

**Learning Outcomes:** Students successfully completing this course will be able to:

1. Describe data by graphs and summary numbers.
2. Apply the basic concepts of probability.
3. Apply the concepts of random variables and distributions, in particular,

binomial and normal distributions.

1. Use the sampling distributions of sample proportions and sample means to

make inferences.

1. Utilize confidence intervals and margin of error to estimate means and

proportions of one population.

1. Perform hypothesis testing for means and proportions for single populations

and interpret the results.

1. Apply least square regression to data to make predictions and interpret

correlations.

**Attendance**:

* **Face-to-Face:** Students are expected to arrive on time and attend classes when scheduled. Attendance is essential to learning the topics in the course and will be recorded by using assigned seating. A seating chart will be emailed by the first day of class. **Any students that miss more than five (5) days of face-to-face class will be dropped from the course with a grade of WF.**
* **Online:** Students are expected to access the course on CougarView and WebAssign a few times a week. Attendance will be recorded by seeing the students’ “Last Online” date. Any student that does not login for more than one week will be counted as absent for the week, and **any students that accumulate more than five (5) absences will be dropped from the course with a grade of WF.**

**Homework:**

* Homework assignments will be assigned, submitted, and graded through WebAssign.
* Due dates can be found in WebAssign and in the schedule at the end of this document.
* **No late homework will be accepted and will be assigned a score of 0.**

**Exams:**

* There will be three exams, not including the final. The three exams are scheduled for **Friday, February 26, 2021 (Exam 1),** **Friday, March 19, 2021, (Exam 2)**, and **Friday, April 16, 2021 (Exam 3).**
* **No make-up exams will be given.** If a test is missed for a valid, documented reason, the missed exam score will be replaced by the average of the other two exam scores.
* Exam 1 will cover Chapters 1-3, Exam 2 will cover Chapters 4-6, and Exam 3 will cover Chapters 7-8.
* Exams should be taken from Thursday – Sunday on you own time through WebAssign. The time allowed for each exam is two (2) hours.
* You are allowed the chapter slides, the textbook, and RStudio for the exams.
* Each exam allows for 2 attempts at each problem.

**Final Exam**:

* The comprehensive final exam must be taken online from **Tuesday, May 4, 2021 – Saturday, May 8, 2021.**
* The time allowed for the final exam is 2 hours and 30 minutes.
* **Any exam not submitted by Saturday, May 8, 2020, at 11:30 PM will be considered late and assigned a score of zero (0).**
* The final exam is comprehensive and completely online through WebAssign. Chapter slides, the textbook, and RStudio are allowed. **No make-up finals will be given.**

**Grades:**

|  |  |
| --- | --- |
| Homework/Assignments | 15% |
| 3 Exams | 60% |
| Final | 25% |

**Grading Policy:** The grades are guided by the table below:

|  |  |
| --- | --- |
| **Range** | **Grade** |
| 90%-100% | A |
| 80%-89% | B |
| 70%-79% | C |
| 60%-69% | D |
| 59% or lower | F |

**Important Dates:**

|  |  |
| --- | --- |
| **Classes Begin** | Monday, January 25, 2021 |
| **Deadline to withdraw with a WP** | TBA |
| **Last Day of Classes** | Friday, April 30, 2021 |

**Physical Distancing Statement:** Students and faculty are expected to remain physically distanced during the course of the pandemic. For courses that are designated for in-person or hybrid delivery, it is advised that information sharing should occur electronically. Unless it is otherwise necessary, syllabi and other educational materials should be provided via CougarView, email, or other remote medium. Remote activities are necessary, as it is possible that a move to fully online instruction may be required before this course is completed.

**For safety, while physically present, all individuals should remain 6+ feet apart at all times. Face coverings and physical distancing will be required this fall for anyone on campus.** The face covering requirement will be enforced according to our student code of conduct. Students unable to wear face coverings due to other health challenges may request accommodations through our Center for Accommodation and Access. The first step is completing the CAA COVID intake form at <https://caa.columbusstate.edu/surveys/covid-intake-form.php> or emailing [CAA@columbusstate.edu](mailto:CAA@columbusstate.edu) for guidance.

**Emotional and Mental Health Statement:** Your emotional and mental health is very important and can affect your ability to meet your academic responsibility. Part and full time students have free access to mental health counseling through the CSU [Counseling Center](https://counseling.columbusstate.edu/). If you begin to experience any sort of emotional concerns such as anxiety, depression, or significant life events that are negatively impacting you, please seek help at the counseling center as quickly as possible. Please know that you will find a friendly "virtual" face for your appointments. Hours of operation are 8:00AM to 8:00PM Monday and Tuesday and 8:00AM to 5:00PM Wednesday through Friday. You can call to set up an appointment: 706-507-8740.   If you are in crisis during non-business hours, please call the Georgia Crisis Line:  1-800-715-4225.

**ADA and 504 Statement:** If you have a documented disability as described by the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973, Section 504, you may be eligible to receive accommodations to assist in programmatic and/or physical accessibility. We recommend that you contact the Center for Accommodation and Access located in Schuster Student Success Center, Room 221, [706-507-8755](tel:%28706%29%20507-8755) as soon as possible. The Center for Accommodation and Access can assist you in formulating a reasonable accommodation plan and in providing support. Course requirements will not be waived but accommodations may be able to assist you to meet the requirements. Technical support may also be available to meet your specific need.

**Disorderly Conduct:** Disruptive behavior will not be tolerated. Students are expected to come to class ready to learn. **Cell phones should be on silent and put away during class time.**

**Academic Dishonesty:** Academic and/or behavioral misconduct will not be tolerated.  Refer to the Student Responsibilities section of the Student Handbook for further details.

For information regarding HB 280 (Campus Carry), please refer to [www.usg.edu/HB280](http://www.usg.edu/HB280). It is the permit holder's responsibility to know and comply with the law.

Tentative Course Schedule

(Friday’s lectures, reviews, and exams must be done online. Lectures and reviews will be posted on CougarView, while exams will be on WebAssign.)

|  |  |  |
| --- | --- | --- |
| **Week** | **Date** | **Coverage** |
| 1 | 1/25 (M) | Syllabus/Class Policies |
| 1/27 (W) | * 1. Definitions of Statistics, Probability, and Key Terms   2. Data, Sampling, and Variation in Data and Sampling |
| 1/29 (F) | * 1. Frequency, Frequency Tables, and Levels of Measurement   2. Experimental Design and Ethics |
| 2 | 2/1 (M) | 2.1 Stem-and-Leaf Graphs (Stemplots), Line Graphs, and Bar Graphs  2.2 Histograms, Frequency Polygons, and Time Series Graphs |
| 2/3 (W) | 2.3 Measures of the Location of the Data  2.4 Box Plots  **Chapter 1 Homework Due at 9 PM** |
| 2/5 (F) | 2.5 Measures of the Center of the Data  2.6 Skewness and the Mean, Median, and Mode |
| 3 | 2/8 (M) | 2.7 Measures of the Spread of the Data |
| 2/10 (W) | 3.1 Terminology |
| 2/12 (F) | 3.2 Independent and Mutually Exclusive Events  **Chapter 2 Homework Due at 9 PM** |
| 4 | 2/15 (M) | 3.3 Two Basic Rules of Probability |
| 2/17 (W) | 3.4 Contingency Tables |
| 2/19 (F) | Review/Practice Problems – Chapter 1/Chapter 2/Chapter 3 |
| 5 | 2/22 (M) | 4.1 Probability Distribution Function (PDF) for a Discrete Random Variable |
| 2/24 (W) | 4.2 Mean or Expected Value and Standard Deviation  **Chapter 3 Homework Due at 9 PM** |
| 2/26 (F) | **Exam 1 (Chapters 1, 2, and 3)** |
| 6 | 3/1 (M) | 4.3 Binomial Distribution |
| 3/3 (W) | 4.6 Poisson Distribution |
| 3/5 (F) | 5.1 Continuous Probability Functions |
| 7 | 3/8 (M) | 5.2 The Uniform Distribution |
| 3/10 (W) | 5.3 The Exponential Distribution  **Chapter 4 Homework Due at 9 PM** |
| 3/12 (F) | 6.1 The Standard Normal Distribution |
| 8 | 3/15 (M) | 6.2 Using the Normal Distribution |
| 3/17 (W) | 7.1 The Central Limit Theorem for Sample Means (Averages)  **Chapter 5 Homework Due at 9 PM** |
| 3/19 (F) | Review/Practice Problems – Chapter 4/Chapter 5/Chapter 6 |
| 9 | 3/22 (M) | 7.2 The Central Limit Theorem for Sums |
| 3/24 (W) | 7.3 Using the Central Limit Theorem  **Chapter 6 Homework Due at 9 PM** |
| 3/26 (F) | **Exam 2 (Chapters 4, 5, and 6)** |
| 10 | 3/29 (M) | 8.1 A Single Population Mean using the Normal Distribution |
| 3/31 (W) | 8.2 A Single Population Mean using the Student t Distribution  **Chapter 7 Homework Due at 9 PM** |
| 4/2 (F) | 8.3 A Population Proportion |
| 11 | 4/5 (M) | 9.1 Null and Alternative Hypothesis |
| 4/7 (W) | 9.2 Outcomes and the Type I and Type II Errors |
| 4/9 (F) | Review/Practice Problems – Chapter 7/Chapter 8 |
| 12 | 4/12 (M) | 9.3 Distribution Needed for Hypothesis Testing |
| 4/14 (W) | 9.4 Rare Events, the Sample, Decision, and Conclusion  **Chapter 8 Homework Due at 9 PM** |
| 4/16 (F) | **Exam 3 (Chapters 7 and 8)** |
| 13 | 4/19 (M) | 9.5 Additional Information and Full Hypothesis Test Examples |
| 4/21 (W) | 12.1 Linear Equations |
| 4/23 (F) | 12.2 Scatter Plots  **Chapter 9 Homework Due at 9 PM** |
| 14 | 4/26 (M) | 12.3 The Regression Equation |
| 4/28 (W) | 12.5 Prediction |
| 4/30 (F) | Review/Practice Problems – Final  **Chapter 12 Homework Due at 9 PM** |