

Course Syllabus for STAT 2231, Section D, Fall 2017

Instructor: Dr. Steve Carden **Email:** scarden@georgiasouthern.edu Use your georgiasouthern.edu account.

Office Hours: Math/Physics 2042A, 12:30 – 1:30 Monday through Thursday, and other times by request.

Class Meeting Time: 11:15-12:05 Monday, Wednesday, Friday **Class Location:** Math/Physics 2021

Course Materials:

Textbook: *Introductory Statistics* from OpenStax. This textbook is free to download as a pdf from <https://openstax.org/details/books/introductory-statistics>, and cheap to purchase a hard copy.

Lecture Notes: I'll be posting a skeleton document for taking notes on Folio for each lecture. You'll need these for the daily group quizzes after lecture.

Organization: A 3-ring binder for lecture note skeletons. I'll hole-punch anything I hand back. Bring some notebook/printer paper for scratch work.

Software: Homework is assigned through WebWorks, a free and open-source online homework system. It may be accessed through the "Homework" module in Folio.

Technology:

- A calculator with statistical capabilities. I will be using the TI-84 during demonstrations, but the TI-83, 89, 92, Nspire, and Casio FX-9750GII, FX-9760GII are also capable. If you have some other model, check with me to see if it has the necessary capabilities. Almost any graphing calculator will work. Exam problems will assume you have one of these calculators.
- An iClicker2. This will be used for daily quizzes and exams.

Prerequisite: A minimum grade of "C" in one of MATH 1101, MATH 1111, MATH 1112, MATH 1113, MATH 1232 or MATH 1441.

Course Description: An introductory, 3 credit hour statistics course which covers descriptive statistics, probability, random variables and selected probability distributions, statistical inference including confidence intervals and hypothesis tests. Appropriate technology will be used for simulation and to solve statistical problems. Neither a background in calculus nor experience with computers is required.

Learning Objectives: By the end of this course, students will be able to:

1. Create and interpret visual displays and quantitative summaries for distributions and relationships.
2. Critically assess whether assertions merit acceptance based on statistical data and experimental design.
3. Analyze outcome-specific values as random variables, including the special cases of Binomial and Normal random variables.
4. Apply basic probability concepts and formulae to calculate the probability of events.

5. Explain the role that sampling distributions play in statistical inference.
6. Create confidence intervals, perform hypothesis tests, and correctly interpret the results.
7. Use correlation and linear regression to quantify the relation between two variables and predict the value of one variable given the other.
8. Use modern technology such as graphing calculators and spreadsheets to facilitate calculations.

Grading scale: A: [89.5, ∞)
B: [79.5, 89.5)
C: [69.5, 79.5)
D: [59.5, 69.5)
F : ($-\infty$, 59.5)

Grading Breakdown:

- **60% 4 in-class tests:** One 8.5 x 11 inch formula sheet (front and back) may be used for each exam. Keep the formula sheets for the final exam! Make-up tests will be given only for University sanctioned events and medical or funeral related absences with documentation submitted through the Dean of Student's office.
- **10% Project:** Throughout the semester, we'll talk about a project to tie together all the concepts we'll cover and practice real-life application. It will be officially assigned around the 3rd exam.
- **10% Final exam:** This grade may replace a missed exam or lowest exam grade. Save formula sheets for this exam!
- **10% WeBWork online homework:** Most lectures will have an associated homework assignment. Homework is always due at 11:59PM of the Wednesday the week after assignment.
- **10% Daily group quizzes:** This portion of your grade is intended to measure participation and effort. After each lecture will be a set of iClicker questions. 50% credit is gained by answering all questions, with another 50% earned by getting at least half of the questions correct. Daily grades are not recorded for review or test days. If you must be absent but still want to earn credit, hand in a notecard with your section, name, and quiz answers within a week of the missed class.

Attendance: Daily quizzes serve as a proxy for attendance. If you miss more than 5 lectures, I suggest you drop the course. If the instructor is more than ten minutes late, class is considered dismissed.

Distractions: If the instructor or a student has the floor, pay attention to the discourse. If a conversation goes off-topic or becomes a distraction to your classmates or myself, I will intervene. First offense will elicit a warning, subsequent offenses will reduce the next exam score by 1 point, then 2 points, then 3, etc. Silence your electronics and place them out of sight until class is over. The use of electronic devices during the daily group quiz will result in a grade of zero.

Academic Integrity: You are encouraged to work together on daily quizzes, homework, and exam preparation (be sure you are internalizing, not just copying!)

However, exams are meant to assess YOUR performance and knowledge. Using any information obtained from a classmate, accessing a phone or other communication device, sharing a calculator during an exam, or the use of any item not explicitly allowed by the instructor are all strictly prohibited. Any violations will result in a grade of zero and will be reported to the Office of Student Conduct.

Special Accommodations: If you have a letter outlining classroom or testing accommodations to which you are entitled, please come by my office to discuss this matter. Please provide me a copy of your letter, even if you choose not to use any of the special accommodations to which you are entitled, that I can be prepared should you choose to use this option. More information is available at <http://studentsupport.georgiasouthern.edu/sdrc/>.

Additional Resources: The Academic Success Center sponsors free tutoring with no appointment necessary. For specific hours and locations, visit <http://students.georgiasouthern.edu/asc/tutoring/>. Also, the **Math And S**tat Enhancement Room (MASTER) in MP-3000 offers tutoring for STAT 2231.

Last Revised 9/13/2017. Yellow means no class, gray means no daily grade.

Date	Topic	Notes
M 8/14	Overview and Syllabus	Attendance verification
W 8/16	Lecture 1: Definitions, Populations, Samples	8/17 is last day of add/drop
F 8/18	Lecture 2: How to Sample	
M 8/21	Lecture 3: Recognizing and Avoiding Bias	
W 8/23	Lecture 4: Experiments vs Observation	
F 8/25	Lecture 5: Variables & Visual Summaries	
M 8/28	Lecture 6: Numerical Summaries I: Center, Spread	
W 8/30	Lecture 7: Numerical Summaries II: Spread, Relative Standing	
F 9/1	Lecture 8: Numerical Summaries III: z-scores, Empirical Rule	
M 9/4	LABOR DAY	
W 9/6	Lecture 9: How to Lie with Statistics	
F 9/8	HURRICANE IRMA	
M 9/11	CLASSES CANCELED	
W 9/13	CLASSES CANCELED	
F 9/15	Review for Exam 1	
M 9/18	Exam 1	
W 9/20	Lecture 10: Scatterplots and Correlation	

F 9/22	Lecture 11: Regression and Prediction	
M 9/25	Lab 12: Tiger Hunting	Will meet in computer lab
W 9/27	Lecture 13: Basics of Probability	
F 9/29	Lecture 14: Addition Rules for Probability	
M 10/2	Lecture 15: Conditional Probability and Independence	
W 10/4	Lecture 16: Baye's Rule and Simpson's Paradox	
F 10/6	Review for Exam 2	
M 10/9	Exam 2	Last day to withdraw
W 10/11	Lecture 17: Basics of Random Variables	
F 10/13	Lecture 18: Binomial Random Variables	
M 10/16	Lecture 19: Normal Random Variables, Part I	
W 10/18	Lecture 20: Normal Random Variables, Part II	
F 10/20	Lecture 21: Normal Approximation to the Binomial	
M 10/23	Lecture 22: The Central Limit Theorem, Part I	
W 10/25	Lecture 23: The Central Limit Theorem, Part II	
F 10/27	Lecture 24: Confidence Intervals about Means	
M 10/30	Lecture 25: Confidence Intervals about Proportions	
W 11/1	Project Discussion and Assignment;	
F 11/3	Exam 3 Review	
M 11/6	Exam 3	
W 11/8	Lecture 26: Basics of Hypothesis Testing	
F 11/10	Lecture 27: Hypothesis Tests about Means	
M 11/13	Lecture 28: Hypothesis Tests about Proportions	
W 11/15	Lecture 29: Testing using p-values	
F 11/17	Lecture 30: Two-Sample Tests for Means	
M	THANKSGIVING BREAK	

11/20		
W 11/22	NO CLASSES	
F 11/24	NO CLASSES	
M 11/27	Lecture 31: Two-Sample Tests for Proportions	
W 11/29	Exam 4 Review	
F 12/1	Exam 4	
M 12/4	Project Work Day / Exam 4 handed back	
W 12/6	Final Exam (25 questions). Project due.	