



Instructor	Dr. B. Zinner
Office Hours	After class and by appointment
Software	We will be using the statistical software R via the interface RStudio. Instructions on how to access RStudio will be given in class.
Email	zinnebe@auburn.edu I usually respond to emails within 24 hours.
Text	You do not need to purchase a text book. If you would like to buy one, then I recommend <i>Using R for Introductory Statistics</i> , Second Edition, by John Verzani.
Class	Classes will be taught on Mondays, Wednesdays, and Fridays from 1:15pm until 2:30pm in the Academic Classroom/Lab Complex 153. There will also be a Computer Lab/Help Sessions on Tuesdays and Thursdays from 3:00pm until 4:15pm in the same place.
Credit Hours	4
Prerequisites	MATH 1120, STAT 2510 or departmental approval.
Content	The topics of this course include an introduction to the statistical software package R, various plots to describe data, some probability theory including Bayes' rule, the concepts of confidence intervals and hypothesis testing, power of a test, t-tests, linear regression, analysis of variance, F-tests, goodness-of-fit tests, analysis of covariance, and simple logistic regression.
Homework	Assignments will be posted on the Canvas course website. Your homework will account for 40% of your grade.

Exams	There will be two comprehensive take-home examinations. The assessment of these exams will not only focus on your submitted responses, but will also encompass a detailed discussion following your submission, which is intended to explore your understanding and interpretation of the content. The performance in each of these exams will contribute 30% to your final course grade.										
Grading	<p>Your course grade depends on the scores obtained in the homework (40%) and the two exams (30% each). Grading is guided by the table below.</p> <table><tr><td>59% or less</td><td>60%–69%</td><td>70%–79%</td><td>80%–89%</td><td>90%–100%</td></tr><tr><td>F</td><td>D</td><td>C</td><td>B</td><td>A</td></tr></table>	59% or less	60%–69%	70%–79%	80%–89%	90%–100%	F	D	C	B	A
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Academic Misconduct	<p>Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other scholarly activities. Thus, Auburn University expects that all students have read and understand the University's Code of Student Conduct (https://sites.auburn.edu/admin/universitypolicies/Policies/AcademicHonestyCode.pdf) and that all students will complete all academic and scholarly assignments with fairness and honesty. Failure to follow the rules and guidelines established in the University's Code of Student Conduct may constitute Academic Misconduct.</p> <p>If I suspect that a student has taken part in Academic Misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If the committee determines that you have taken part in academic misconduct, the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.</p>										
Accommodations	Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are immediately needed. If you need accommodations but have not established them, make an appointment with the Office of Accessibility, 1228 Haley Center, 334-844-2096.										

Diversity Statement

Auburn University's mission calls for us to create an environment that is actively inclusive of all students. To this end, I expect all class participants to use and respect student's chosen names regardless of legal status and invite students to share their pronouns should they feel comfortable doing so. Additionally, should you have any concerns regarding discrimination or harassment within the class setting you are welcome to discuss the matter with me and I will do what I can to assist. Should an incident occur, you are also welcome to report it to the Auburn University Bias Education and Response Team (BERT) at <http://studentaffairs.auburn.edu/bert/submit-a-report-of-bias/>

Contingency Plans

If normal class and/or lab activities are disrupted due to illness, emergency, or crisis situation, the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to the syllabus and/or course assignments will replace the original materials.

This syllabus is subject to change at my discretion. Students will be notified promptly of any syllabus changes via email.

Tentative Schedule for the Course Content

Week	Date	Topics	Comments
1	Thu, May 16, 2024		No class
1	Fri, May 17, 2024	Syllabus and Course Overview	Review Syllabus. Preview of course. Get started with R and RStudio. Get help with ChatGPT, Claude, Gemini, or LLama 3.
2	Mon, May 20, 2024	Introduction to R	Using R as a calculator; evaluating formulas in R; statistical functions pnorm() and qnorm(); entering data into R with c() and read.csv()
2	Tue, May 21, 2024	Computer Lab	Assignment 1
2	Wed, May 22, 2024	Introduction to R	swirl; reproducible research: R Markdown; data types: scalars, vectors (numeric, character, logical), matrices, arrays, data frames, and lists; subsetting R objects (vector, matrix, data frame, list), Assignment 2
2	Thu, May 23, 2024	Computer Lab	Assignment 2
2	Fri, May 24, 2024	Introduction to R	Writing R scripts, R functions, and certain control structures (for, if, else)
3	Mon, May 27, 2024	Memorial Day	No class

3	Tue, May 28, 2024	Computer Lab	Assignment 3
3	Wed, May 29, 2024	Introduction to R	Simulate data in R; R functions: set.seed(), sample(), multinomial(), system.time()
3	Thu, May 30, 2024	Computer Lab	Assignment 4
3	Fri, May 31, 2024	Descriptive Statistics	Numerical and graphical description of data; Assignments
4	Mon, Jun 3, 2024	Descriptive Statistics	Description of quantitative bivariate data. R functions: plot with arguments, lab, pch, col, xlim, ylim, legend(), rainbow(), lines(), density()
4	Tue, Jun 4, 2024	Computer Lab	Assignment 5
4	Wed, Jun 5, 2024	Descriptive Statistics	Simple linear regression. Interpretation of intercept and slope, correlation coefficient, coefficient of determination, residuals, prediction
4	Thu, Jun 6, 2024	Computer Lab	Assignments 6
4	Fri, Jun 7, 2024	Descriptive Statistics	Multivariate data. In particular using the ggplot2 package for various plots
5	Mon, Jun 10, 2024	Probability Theory	Probability. Definitions and some classical examples.
5	Tue, Jun 11, 2024	Computer Lab	Assignments 7 and 8
5	Wed, Jun 12, 2024	Probability Theory	Conditional probability, independent events, and Bayes' rule
5	Thu, Jun 13, 2024	Computer Lab	Assignment 9
5	Fri, Jun 14, 2024	Probability Theory	Discrete random variables. Expected value, variance, standard deviation, and the binomial distribution.
6	Mon, Jun 17, 2024	Probability Theory	Asymptotics. Continuous random variables, law of large numbers, central limit theorem
6	Tue, Jun 18, 2024	Computer Lab	Assignment 10
6	Wed, Jun 19, 2024	Juneteenth	No class
6	Thu, Jun 20, 2024		No class
6	Fri, Jun 21, 2024	Probability Theory	Sampling Distributions (Means, Proportions)
7	Mon, Jun 24, 2024		No class due to end of mini-semester I
7	Tue, Jun 25, 2024	Computer Lab	Assignment 11
7	Wed, Jun 26, 2024	Statistical Inference	Confidence Intervals
7	Thu, Jun 27, 2024	Computer Lab	

7	Fri, Jun 28, 2024	Statistical Inference	Hypothesis Testing (concepts)
8	Mon, Jul 1, 2024	Exam 1 Evaluation	
8	Tue, Jul 2, 2024	Exam 1 Evaluation	
8	Wed, Jul 3, 2024	Statistical Inference	Hypothesis Testing (simple examples)
8	Thu, Jul 4, 2024	Independence Day	No class
8	Fri, Jul 5, 2024	Statistical Inference	Comparing two Proportions
9	Mon, Jul 8, 2024	Statistical Inference	Pearson's chi-square tests
9	Tue, Jul 9, 2024	Computer Lab	Assignment 12
9	Wed, Jul 10, 2024	Statistical Inference	Power of a test
9	Thu, Jul 11, 2024	Computer Lab	Assignment 13
9	Fri, Jul 12, 2024	Regression Models	Simple linear regression model revisited
10	Mon, Jul 15, 2024	Regression Models	Residuals and diagnostics. Robust regression.
10	Tue, Jul 16, 2024	Computer Lab	Assignment 14
10	Wed, Jul 17, 2024	Regression Models	Comparing two Means
10	Thu, Jul 18, 2024		No class
10	Fri, Jul 19, 2024	Regression Models	Analysis of Variance (ANOVA), familywise confidence level, familywise error rate
11	Mon, Jul 22, 2024	Regression Models	Pairwise comparisons of means.
11	Tue, Jul 23, 2024	Computer Lab	Assignment 15
11	Wed, Jul 24, 2024	Regression Models	Analysis of Covariance (ANCOVA)
11	Thu, Jul 25, 2024		No class
11	Fri, Jul 26, 2024	Regression Models	Multiple Linear Regression
12	Mon, Jul 29, 2024	Regression Models	Simple Logistic Regression
12	Tue, Jul 30, 2024	Study/Reading Day	
12	Wed, Jul 31, 2024	Exam 2	
12	Thu, Aug 1, 2024	Exam 2 Evaluation	
12	Fri, Aug 2, 2024	Exam 2 Evaluation	