



# On-Campus Course Syllabus

## STA 201

### Introduction to Statistics

### Fall 2024

#### Class Information

**Day and Time:** Tuesdays and Thursdays, 9:30-10:45am

**Room Number:** E201

#### Contact Information

**Instructor Name:** Dr. Brandon Seitzler

**Instructor Email:** [bseitzler@criswell.edu](mailto:bseitzler@criswell.edu)

**Instructor Phone:** 214.818.1309

**Instructor Office Hours:** Mondays 11am-1pm; Tuesdays 8:45-9:15am; Thursdays 8:45-9:15am, 11am-12pm.

[Schedule meetings at www.calendly.com/bseitzler](https://www.calendly.com/bseitzler)

#### Course Description and Prerequisites

An introductory course covering data collection, analysis, presentation, and interpretation of data and probability. Topics include descriptive statistics, estimation, confidence intervals, hypothesis testing, and correlation and regression. (This course satisfies for a Math/ Natural Science course.)

#### Course Objectives

At the end of this course, the student should be able to:

1. Define and summarize research design and data collection principles and concepts.
2. Create and interpret graphical data summaries.
3. Calculate and interpret summary statistics.
4. Calculate probabilities.
5. Perform hypothesis tests.

Adam Smith reminds us that when we were born none of us could do statistics. When you feel lost this semester, find solace in Smith's words. What you are experiencing is normal:

*"The difference of natural talents in different men is, in reality, much less than we are aware of; and the very different genius which appears to distinguish men of different professions, when grown up to maturity, is not upon many occasions so much the cause, as the effect of the division of labour. The difference between the most dissimilar characters, between a philosopher and a common street porter, for example, seems to arise not so much from nature, as from habit, custom, and education. When they came into the world, and for the first six or eight years of their existence, they were, perhaps, very much alike, and neither their parents nor playfellows could perceive any remarkable difference. About that age, or soon after, they come to be employed in very different occupations. The difference of talents comes then to be taken notice of, and widens by degrees, till at last the vanity of the philosopher is willing to acknowledge scarce any resemblance."*

Adam Smith, *The Wealth of Nations* (New York: The Modern Library, 1965), 15-16.

## Required Textbooks

Diez, David M., Christopher D. Barr, Mine Cetinkaya-Rundel. *OpenIntro Statistics*. 4<sup>th</sup> ed. 2019.

<https://www.openintro.org/book/os/>

**Note** that OpenIntro Statistics, 4<sup>th</sup> ed. may be downloaded for free at [openintro.org/os](https://www.openintro.org/book/os/). Physical copies are also available to purchase on Amazon. I recommend that you purchase a physical copy.

## Recommended Reading

- [www.khanacademy.org](https://www.khanacademy.org) - Use this website to catch up on any basic math skills that you find lacking.
- [www.pewforum.org](https://www.pewforum.org) - Use this website to inspire a passion for statistics and social science research.

## Course Requirements and Assignments

- Participation (10%): Class preparation, attendance, and participation are **required**. If you miss classes in this course you will fall behind **very** quickly. If you read the chapter before class our time together will make much more sense to you. If you are not in class by 9:40am, you will be counted absent.
- Reading Quizzes (15%): Reading quizzes are closed book and must be completed individually.
- Problem Sets (25%): Homework assignments are open book and may be completed as a group.
- 2 Exams (25% each): Students will have two exams over the course of the semester. These exams are not cumulative. All exams are in class and open note/open book.
- Additional in-class quizzes and assignments will not count toward your final grade.

## Course/Classroom Policies and Information

- The ideas expressed by readings, resources, and outside guests in this course should not be interpreted as implying the instructor's or college's endorsement. Course materials and outside speakers are selected for their perceived value in helping to meet the course goals and objectives.
- At all times and especially when we are working in and with the community you are expected to exhibit the college's graduate profile:
  - **Ambassadors** who communicate effectively across various platforms and contexts.
  - **Cultivators** who seek to understand diverse populations and develop purposeful relationships.
  - **Peacemakers** who pursue truth and righteousness through mercy and reconciliation.
  - **Problem-solvers** who think critically, creatively, and collaboratively.
  - **Professionals** who demonstrate competence in their field of study and intentionality in their vocation.
- You may not have your cell phone anywhere in sight during class.
- The one exception to my cell phone rule is using your cell phone as a calculator or to look something up online as a part of class participation. Other than these two exceptions, phones belong in bags.
- You may not use your laptop during class for anything other than class-related activities.
- Instructors work closely with the Student Success Manager. To help provide resources to students who may need it most, I will communicate the names of students who have two consecutive absences, low

grades, or any other signs that they may be struggling. The Student Success Manager will reach out to these students and help find appropriate resources.

- Class participation requires both attendance and preparation. If you miss classes, you will fall behind very quickly. If you read the chapter before class, our time together will make much more sense to you.
- The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.
- The following language is quoted from Criswell College's Credit Hours policy: "For academic purposes, Criswell College uses "Carnegie" units to measure semester credit hours. A Carnegie unit of credit is awarded to students for the satisfactory completion of at least one 50-minute session of classroom or direct faculty instruction and at least 100 minutes of out-of-class work per week for not less than 15 weeks."
  - This policy does not mean that attending class or doing work for a certain amount of time guarantees a certain grade or credit for the course.
  - This policy does mean that you must complete this many hours of work to qualify for course credit.
  - Therefore, one way that you might think of your time being divided up, **per week**, over the course of the semester, for a 3-credit course is the following:
    - 150 minutes of class instruction (two 75-minute course sessions per week).
    - 300+ minutes of out-of-class work. A possible allocation of this out-of-class time could be:
      - 180 minutes of reading
      - 120 minutes of homework
  - This means that each 3-hour course you register for requires a **minimum** of 7.5 hours of work per week.
    - If you are taking 12 hours this semester, you should think of your school commitment as a 30-hour per week job.
    - If you are taking 15 hours this semester, you should think of your school commitment as a 37.5-hour per week job.

### **Class Attendance**

Students are responsible for enrolling in courses for which they (1) anticipate being able to attend every on-campus class session on the day and time appearing on course schedules, or (2) participating in academically related activities as identified in online-course schedules including synchronous class sessions conducted remotely by video, and then making every effort to do so. When unavoidable situations result in absence or tardiness, students are responsible for acquiring any missed information. Professors are not obliged to allow students to make up missed work. Per their independent discretion, individual professors may determine how attendance affects students' ability to meet course learning objectives and whether attendance affects course grades. Professors apprise students of such information in course syllabi.

Students receiving grants, loans, or scholarships must meet specified requirements of various departments at the college and should consult relevant sections of the *Academic Catalog*. To ensure such funds will not be forfeited, students are responsible for contacting the proper departments to ascertain any specific course participation requirements and consequences of not meeting such requirements. Students receiving grants, loans, or scholarships should consult the Financial Aid office.

While Criswell College is a non-attendance taking institution, it nevertheless must demonstrate that students begin their courses in order to comply with Federal Aid regulations. Accordingly, students must participate in academically related activities during census periods. Failure to meet this requirement will result in students being administratively dropped from courses.

Academically related activity is defined as any course-related activity that may be used as evidence of attendance. Examples include:

- physical presence in a classroom during a class session with the instructor present,
- participation in a synchronous remote video class session with the instructor present,
- submission of an academic assignment, quiz, or exam,
- participation in an interactive tutorial or computer-assisted instruction,
- participation in a study group or discussion board that is assigned by the instructor,
- documentation showing that the student and a faculty member corresponded about the academic subject of the course.

**NOTE:** Logging into a Canvas course alone and logging into a Synchronous Online class session without active participation or with the camera off are not considered attendance.

**NOTE:** A census period begins on the first day of a semester/term and runs through the end of the last day to drop courses. During the census period, attendance data is collected in order to demonstrate compliance with Federal Aid regulations. There is no census period for winter terms since there is no last day to drop courses.

## Campus Closure

To ensure the health and safety of students and employees, college administrators may decide it is necessary on rare occasions to close the campus. Once this decision is announced, instructors will contact students to provide further details regarding the campus closure's impact on those courses. Students are responsible to watch for communication from their instructors and respond appropriately. (Unless otherwise specified by the instructor in this syllabus, this communication will be sent to the student's Criswell College e-mail account.)

In order to make progress toward the courses' objectives, instructors have the freedom during most campus closures to require students to participate in activities as alternatives to meeting on campus. An instructor may, for example, hold class remotely (through Zoom) at the scheduled time, provide a recording of a class or presentation for students to watch independently, or assign other activities that students are to accomplish before returning to campus. Students are responsible for accomplishing these alternative activities as well as any course requirements listed in this syllabus during the period of the campus closure. If, during the period of the campus closure, personal circumstances prohibit a student from accomplishing these alternative activities or course requirements and assignment listed in the syllabus during the campus closure, the student is responsible for communicating with the instructor as soon as possible. Instructors will not penalize students who do not

have the means to accomplish the alternative activities during the period of the campus's closure and will work with students whose circumstances during the campus closure prohibited their timely completion of course requirements and assignments in the syllabus.

## Grading Scale

			Grade Definitions
A	93-100	4.0 grade points per semester hour	Exceptional
A-	90-92	3.7 grade points per semester hour	
B+	87-89	3.3 grade points per semester hour	
B	83-86	3.0 grade points per semester hour	Above Average
B-	80-82	2.7 grade points per semester hour	
C+	77-79	2.3 grade points per semester hour	
C	73-76	2.0 grade points per semester hour	Average
C-	70-72	1.7 grade points per semester hour	
D+	67-69	1.3 grade points per semester hour	
D	63-66	1.0 grade point per semester hour	Below Average
D-	60-62	0.7 grade points per semester hour	
F	0-59	0.0 grade points per semester hour	Unacceptable

## Incomplete Grades

Students requesting a grade of Incomplete (I) must understand that incomplete grades may be given only upon approval of the faculty member involved. An "I" may be assigned only when a student is currently passing a course and in situations involving extended illness, serious injury, death in the family, or employment or government reassignment, not student neglect.

Students are responsible for contacting their instructors prior to the end of the semester, plus filing the appropriate completed and approved academic request form with the Registrar's Office. The "I" must be removed (by completing the remaining course requirements) no later than 60 calendar days after the close of the term or semester in which the grade was awarded, or the "I" will become an "F."

## Academic Honesty

Absolute truth is an essential belief and basis of behavior for those who believe in a God who cannot lie and forbids falsehood. Academic honesty is the application of the principle of truth in the classroom setting. Academic honesty includes the basic premise that all work submitted by students must be their own and any ideas derived or copied from elsewhere must be carefully documented.

Academic dishonesty includes, but is not limited to:

- cheating of any kind,
- submitting, without proper approval, work originally prepared by the student for another course,
- plagiarism, which is the submitting of work prepared by someone else as if it were his own, and

- failing to credit sources properly in written work.

## **Institutional Assessment**

Material submitted by students in this course may be used for assessment of the college's academic programs. Since programmatic and institutional assessment is done without reference to specific students, the results of these assessments have no effect on a student's course grade or academic standing at the college. Before submitting a student's work for this type of assessment, the course instructor redacts the work to remove anything that identifies the student.

## **Institutional Email Policy**

All official college email communications to students enrolled in this course will be sent exclusively to students' institutional email accounts. Students are expected to check their student email accounts regularly and to respond in an appropriate and timely manner to all communications from faculty and administrative departments.

Students are permitted to setup automatic forwarding of emails from their student email accounts to one or more personal email accounts. The student is responsible to setup and maintain email forwarding without assistance from college staff. If a student chooses to use this forwarding option, he/she will continue to be responsible for responding appropriately to all communications from faculty and administrative departments of the college. Criswell College bears no responsibility for the use of emails that have been forwarded from student email accounts to other email accounts.

## **Disabilities**

Criswell College recognizes and supports the standards set forth in Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and similar state laws, which are designed to eliminate discrimination against qualified individuals with disabilities. Criswell College is committed to making reasonable accommodations for qualifying students, faculty, and employees with disabilities as required by applicable laws. For more information, please contact the Student Services Office.

## **Intellectual Property Rights**

Unless otherwise specifically instructed in writing by the instructor, students must neither materially nor digitally reproduce materials from any course offered by Criswell College for or with the significant possibility of distribution.

## **Research and Writing Standards**

The default writing style for written assignments in Criswell College Courses is the latest edition of *A Manual for Writers of Research Papers, Theses and Dissertations* by Kate Turabian. However, instructors are free to require alternative writing styles in their courses. These styles include but are not limited to the American Psychological Association (APA), Chicago Manual of Style, Modern Language Association (MLA), and Society of Biblical Literature (SBL) writing guides.

## **Resources and Supports**

Canvas and SONIS: Criswell College uses Canvas as its web-based learning tool and SONIS for student data. Students needing assistance with Canvas should contact the Canvas Help Support line at (844) 358-6140. Tech support is available at this number, twenty-four hours a day. Students needing help with SONIS should contact the Campus Software Manager at [studenttechsupport@criswell.edu](mailto:studenttechsupport@criswell.edu).

Student Services: The Student Services Office exists to foster and encourage success in all areas of life—physical, intellectual, spiritual, social, and emotional. Students are encouraged to reach out for assistance by contacting the office at 214.818.1332 or [studentservices@criswell.edu](mailto:studentservices@criswell.edu). The Student Services Office also works with local counseling centers to ensure that every student has access to helpful mental health resources. More information is located on the college website at [Criswell College Mental Health Resources](#), and students may contact the Director of Student Services if they have any questions.

Wallace Library: Students can access academic resources and obtain research assistance by contacting or visiting the Wallace Library, which is located on campus. For more information, email the Wallace Library at [library@criswell.edu](mailto:library@criswell.edu). Login credentials are emailed to students near the beginning of the semester.

Tutoring Center: Students are encouraged to consult with tutors to improve and enhance their skills and confidence. Tutors have been recommended by the faculty to ensure that the tutor(s) are qualified to serve the student body. Every tutor brings experience and expertise in an effort to provide the proper resources for the subject matter at hand. To consult with a tutor, students can schedule an appointment through Calendly (<https://calendly.com/criswell-tutoringcenter>) or by visiting the Tutoring Center located on the second floor in room E203. For questions, call 214.818.1373 or email at [tutoringcenter@criswell.edu](mailto:tutoringcenter@criswell.edu).

## Course Outline/Calendar

Date	Readings Due	Assignments Due
August 20	No Class – MLK Day	
August 22	None	
August 27	<ul style="list-style-type: none"> <li>1.1 Case Study: using stents to prevent strokes</li> <li>1.2 Data Basics</li> <li>1.3 Sampling principles and strategies</li> <li>1.4 Experiments</li> <li>Videos: 1.1, 1.2, 1.3A, 1.3B, 1.4</li> </ul>	<ul style="list-style-type: none"> <li>Reading Quiz</li> </ul>
August 29		
September 3	<ul style="list-style-type: none"> <li>2.1 Examining numerical data</li> <li>2.2 Considering categorical data</li> <li>2.3 Case study: malaria vaccine</li> <li>Videos: 2.1, 2.2, 2.3</li> </ul>	<ul style="list-style-type: none"> <li>Reading Quiz</li> </ul>
September 5		<ul style="list-style-type: none"> <li>Problem Set #1 due</li> </ul>
September 10	<ul style="list-style-type: none"> <li>3.1 Defining probability</li> <li>3.2 Conditional Probability</li> <li>Videos: 3.1, 3.1, “Would you take this bet?”</li> </ul>	<ul style="list-style-type: none"> <li>Reading Quiz</li> </ul>
September 12		
September 17	<ul style="list-style-type: none"> <li>4.1 Normal Distribution</li> </ul>	<ul style="list-style-type: none"> <li>Reading Quiz</li> </ul>

	<ul style="list-style-type: none"> <li>• Video: 4.1</li> </ul>	
September 19		<ul style="list-style-type: none"> <li>• Problem Set #2 due</li> </ul>
September 24	<ul style="list-style-type: none"> <li>• 5.1 Point estimates and sampling variability</li> <li>• Videos: 5.1, “Why do we use 0.05 as a significance level?”</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
September 26		
October 1	<ul style="list-style-type: none"> <li>• 5.2 Confident intervals for a proportion</li> <li>• 5.3 Hypothesis testing for a proportion</li> <li>• Videos: 5.2, 5.3, “Inference for other estimators”</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
October 3		<ul style="list-style-type: none"> <li>• Problem Set #3 due</li> </ul>
October 8	<ul style="list-style-type: none"> <li>• Review and catch-up day</li> </ul>	
October 10		<ul style="list-style-type: none"> <li>• Midterm Exam in class</li> </ul>
October 15	<b>No Class – Student Development Week</b>	
October 17	<b>No Class – Student Development Week</b>	
October 22	<ul style="list-style-type: none"> <li>• 6.1 Inference for a single proportion</li> <li>• 6.2 Difference of two proportions</li> <li>• Video: “6.1 + 6.2”</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
October 24		
October 29	<ul style="list-style-type: none"> <li>• 6.3 Testing for goodness of fit using chi-square</li> <li>• 6.4 Testing for independence in two-way tables</li> <li>• Videos: 6.3, 6.4</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
October 31		<ul style="list-style-type: none"> <li>• Problem Set #4 due</li> </ul>
November 5	<ul style="list-style-type: none"> <li>• 7.1 One-sample means with the t-distribution</li> <li>• 7.2 Paired data</li> <li>• 7.3 Difference of two means</li> <li>• Videos: 7.1A, 7.1B, 7.2, 7.3</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
November 7		
November 12	<ul style="list-style-type: none"> <li>• 7.4 Power calculations for a difference of means</li> <li>• 7.5 Comparing many means with ANOVA</li> <li>• Videos: 7.4, 7.5A, 7.5B, 7.5C</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
November 14		<ul style="list-style-type: none"> <li>• Problem Set #5 due</li> </ul>
November 19	<ul style="list-style-type: none"> <li>• 8.1 Fitting a line, residuals, and correlation</li> <li>• 8.2 Least squares regression</li> <li>• Videos: 8.1, 8.2 – Fitting a LS..., 8.2 – Detailed overview...</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
November 21		
November 26	<b>No Class – Fall Break</b>	
November 28	<b>No Class – Fall Break</b>	
December 3	<ul style="list-style-type: none"> <li>• 8.3 Types of outliers in linear regression</li> <li>• 8.4 Inference for linear regression</li> <li>• Videos: 8.3, 8.4</li> </ul>	<ul style="list-style-type: none"> <li>• Reading Quiz</li> </ul>
December 5		<ul style="list-style-type: none"> <li>• Problem Set #6 due</li> </ul>
December 10	<ul style="list-style-type: none"> <li>• Final Exam review in class</li> </ul>	
December 12		<ul style="list-style-type: none"> <li>• Final Exam in class</li> </ul>

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