

# STAT 216: Introduction to Statistics

Syllabus for Blended Sections: Fall 2020

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**NOTE:** This syllabus is for blended sections of STAT 216 only. For online sections of STAT 216, refer to the online section syllabus.

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## Instructor contact information

Your primary contact in STAT 216 is your instructor. If you have concerns that cannot be answered by your instructor, you may reach out to the Student Success Coordinator or the Course Supervisor.

Refer to your section's *D2L Announcements* page for your instructor and co-instructor/TA contact information.

### Student Success Coordinator

**Jade Schmidt**

email: jade.schmidt2@montana.edu

Office: Wilson 2-263

Phone: (406) 994-6557

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### Assistant Coordinator

**Melinda Yager**

email: melinda.yager@montana.edu

Office: Wilson 1-145

Phone: (406) 994-6876

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### Course Supervisor

**Dr. Stacey Hancock**

email: stacey.hancock@montana.edu

Office: Wilson 2-195

Phone: (406) 993-5350

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## Course calendars

- STAT 216 calendar for students in...
    - Monday cohorts
    - Tuesday cohorts
    - Wednesday cohorts
    - Thursday cohorts
    - Friday cohorts
  - MSU academic calendar
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## Course description and objectives

Stat 216 is designed to engage you in the statistical investigation process from developing a research question and data collection methods to analyzing and communicating results. This course introduces basic descriptive and inferential statistics using both traditional (normal and t-distribution) and simulation approaches including confidence intervals and hypothesis testing on means (one-sample, two-sample, paired), proportions (one-sample, two-sample), regression and correlation. You will be exposed to numerous examples of real-world applications of statistics that are designed to help you develop a conceptual understanding of statistics. After taking this course, you should be able to:

- Understand and appreciate how statistics affects your daily life and the fundamental role of statistics in all disciplines
- Evaluate statistics and statistical studies you encounter in your other courses
- Critically read news stories based on statistical studies as an informed consumer of data
- Assess the role of randomness and variability in different contexts
- Use basic methods to conduct and analyze statistical studies
- Evaluate and communicate answers to the four pillars of statistical inference: How strong is the evidence of an effect? What is the size of the effect? How broadly do the conclusions apply? Can we say what caused the observed difference?

### **MUS STAT 216 learning outcomes**

1. Understand how to describe the characteristics of a distribution.
2. Understand how data can be collected, and how data collection dictates the choice of statistical method and appropriate statistical inference.
3. Interpret and communicate the outcomes of estimation and hypothesis tests in the context of a problem.
4. To understand the scope of inference for a given dataset.

### **CORE 2.0**

This course fulfills the Quantitative Reasoning (Q) CORE 2.0 requirement because learning probability and statistics allows us to disentangle what's really happening in nature from "noise" inherent in data collection. It allows us to evaluate claims from advertisements and results of polls and builds critical thinking skills which form the basis of statistical inference. Students completing a Core 2.0 Quantitative Reasoning (Q) course should demonstrate an ability to:

Interpret and draw inferences from mathematical models such as formulas, graphs, diagrams or tables. Represent mathematical information numerically, symbolically and visually. Employ quantitative methods in symbolic systems such as, arithmetic, algebra, or geometry to solve problems.

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## **Prerequisites**

Entrance to STAT 216 requires at least one of the following be met:

- Grade of C- or better in a 100-level math course (or equivalent)
- Grade of B or better in MATH 096
- Level 30 on the Math Placement Exam or a combination of a good score on Math portion of SAT (540 or higher) or ACT (23 or higher) and/or good high school GPA
  - See the Math Prerequisite Flowchart for more details.

You should have familiarity with computers and technology (e.g., Internet browsing, word processing, opening/saving files, converting files to PDF format, sending and receiving e-mail, etc.).

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## **Course materials and resources**

### **Online textbook and in-class activities**

The free, online textbook for this course can be found at <https://mtstateintrostats.github.io/IntroStatTextbook/> (also linked in D2L).

A workbook of in-class activities is available for purchase in the MSU Bookstore. Activities are also available online, but students are expected to bring a printed copy of that week's activity to class.

**Note that online sections will be using the previous textbook for this course, *Introduction to Statistical Investigations* by Tintle et al., through the WileyPLUS platform.** Students enrolled in the online section will need to purchase a subscription to WileyPLUS, but will not need to purchase the activity workbook from the MSU Bookstore. See your section's D2L page for more details.

### STAT 216 YouTube channel

Visit our YouTube channel for short instructional videos on course material (also linked in D2L).

### RStudio

We will be using the statistical software R through the IDE RStudio for data visualization and statistical analyses. Students have four options for accessing this free software:

1. Download to your own laptop. (Note R and RStudio will not run on iPad, notebooks, or Chromebooks. If you have one of these devices, see the cloud-based option below.)
  - Download and install R.
  - Download and install RStudio Desktop.
  - Install the `catstats` package.
2. Use RStudio through the RStudio Cloud. This resource allows you to use RStudio through a web browser. It is free for use, but it does limit you to a certain number of project hours per month.
3. Use RStudio through an MSU virtual machine. Use your NetID to log in at [remotelabs.msu.montana.edu](http://remotelabs.msu.montana.edu), then click on "CLS-STAT-REMOTE". If you do not see an option for "CLS-STAT-REMOTE", please email Student Success Coordinator, Jade Schmidt
4. Use RStudio in an MSU on-campus computer lab.

View this tutorial video on installing R and RStudio if you would like additional installation instructions.

### Learning management tools

- **D2L:** Find your instructor and co-instructor/TA contact info, announcements, exploration information, instructor notes, exam review material, assignment and data files, discussion forums, gradebook.
  - *Important:* Make sure you are receiving email notifications for any D2L activity. In D2L, click on your name, then Notifications. Check that D2L is using an email address that you regularly check; you have the option of registering a mobile number. Check the boxes to get notifications for announcements, content, discussions, and grades.
  - If you have a question about the course materials, computing, or logistics, please post your question to your D2L discussion board instead of emailing your instructor. This ensures all students can benefit from the responses. Other students are encouraged to respond.
- **Gradescope:** Submit and review quizzes and assignments, review exam grades. For more details, see our Gradescope Help for Students document
- **Math Learning Center:** Free drop-in tutoring for 100- and 200-level math and stat courses.

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## Course format and organization

Most sections of Stat 216 will be using a blended classroom format. Each week, students will:

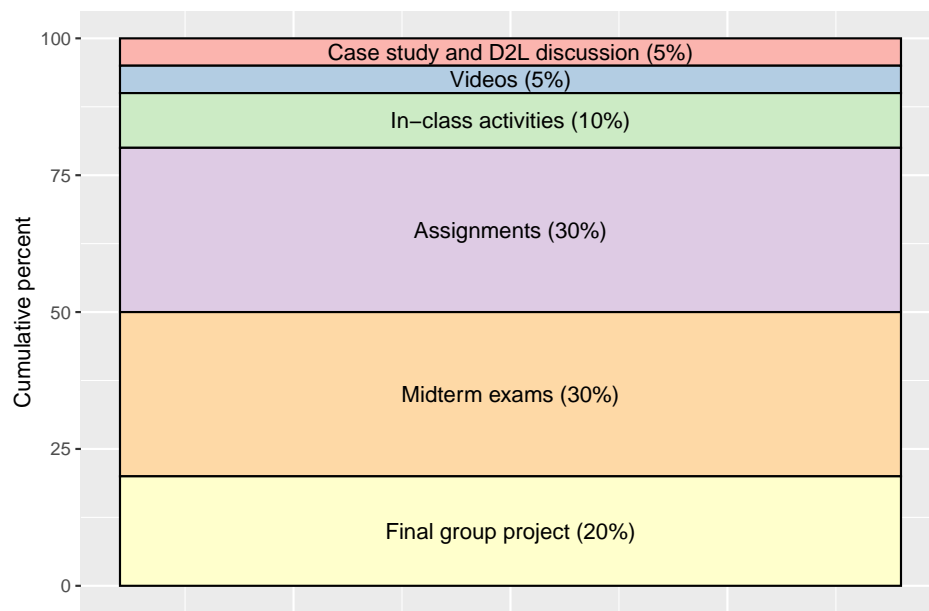
- meet with your fellow student cohort in your assigned classroom one class period per week for **in-class group activities and discussion**,
- **read** assigned sections of the online textbook and **watch videos** on that week's content *prior* to attending your assigned in-person class day,
- read that week's **case study** and answer **discussion questions** on the case study via D2L,
- complete one **assignment** in Gradescope.

Online sections will be available for those students who would prefer not to meet face-to-face in the classroom. If you are unable to attend the face-to-face portions of the blended class, please make sure to register for an online section.

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## Course assessment

Your grade in STAT 216 will contain the following components.



1. Case study and D2L discussion (5%): Each week, you will read a case study and answer reading questions on that case study, posting answers and discussion in the D2L Discussion Forum. You are expected to contribute **2 discussion posts per week, at least one of which must be an original post, not a reply to a classmate**. Discussion posts on case studies will be due each **Sunday at 11pm MST**. The lowest two case study discussion posts will be dropped.
2. Videos (5%): You will be expected to complete the assigned textbook reading and videos prior to attending the in-class activity for each week. Check-in questions will be embedded in the videos. Since you can retake the video quizzes (the most recent grade will be recorded in D2L), no video grades will be dropped.
3. In-class activities (10%): You will meet with your cohort and instructor once per week to work through an group activity focused on the material for that week. Attendance and completion of the activity counts towards this portion of your grade. The lowest activity grade will be dropped.
4. Assignments (30%): You will complete weekly assignments in Gradescope. Weekly assignments will be due **at 11pm MST 5 days after the in-class activity** on the same content. (E.g. If you attend class on Mondays, your assignments will be due each Saturday at 11pm MST.) *Assignment due dates may be shifted the week leading up to an exam. Please see the calendar posted on D2L.* The lowest

assignment grade will be dropped.

5. Midterm exams (30%): There will be two in-class midterm exams (worth 15% each). Midterm exam 1 will be during the week of **September 22-28**; Midterm exam 2 during **November 4-10**. Potential midterm exam questions will be released the week prior to the exam, and you will be given a randomly chosen subset of these questions during your cohort's scheduled in-class time.
6. Final group project (20%): In lieu of a final exam, you will complete a group project. The project will involve a complete data analysis on a research question of your choice, a written report, and a recorded 5-minute presentation. Full details for the project are in the linked Google Doc: STAT 216 Project Instructions

## Late work policies

Given the uniqueness of a semester in the midst of a pandemic, we are aware that illnesses and quarantine may occur more often than in a typical semester. Here are the policies we have in place to accommodate excused absences and late work in a fair way to all students enrolled in this course.

### *Online coursework:*

- **Case study discussion posts and assignments:** Case study discussion posts and assignments are typically available at least five days prior to the due date. Thus, extensions on these posts and assignments are not given unless for extenuating circumstances that prevent the student from working on the post/assignment for that entire period.
- **Videos:** To maximize your learning experience in class, you should watch the required videos prior to that week's in-class activity. You may take the in-video quizzes as many times as you like – the most recent quiz score will be the recorded grade for that video in D2L. Note that if you re-watch a video without taking the quiz, D2L will record a zero for that quiz, even if you took the quiz previously. Thus, we recommend you take notes as you watch the video and write down the quiz questions and your answers. Then, if you choose to review the video, you can re-enter your correct answers.

### *In-person coursework:*

- **In-class activities:** Students are expected to be in class during in-class activities to provide support to each other and their teammates while working through the material; the in-class activity score is also a proxy for course attendance and engagement. If you need to miss a class period due to illness, quarantine, or other extenuating circumstances, please email your instructor a picture or scan of your completed activity due that day, and we can give you credit for your completed activity. If the activity is not received by the end of the day it is due, you may not receive credit.
- **Exams:**
  - Students that are in quarantine but healthy enough to take the exam should email Student Success Coordinator Jade Schmidt to arrange to take the exam at home while being proctored via Zoom.
  - If you are ill to the point of not being able to take the exam, please email Student Success Coordinator Jade Schmidt to arrange a time to take the exam remotely via Zoom when you are feeling better within the week of the exam.
  - Students who miss the exam without contacting the instructor prior to the exam will receive a zero on the exam. Work is not a legitimate reason for an exam absence.

## Letter grades

Final course grades will be determined according to the following scale.

Letter Grade	Weighted Score
A	93-100%
A-	90-92.99%
B+	87-89.99%
B	83-86.99%
B-	80-82.99%

Letter Grade	Weighted Score
C+	77-79.99%
C	73-76.99%
C-	70-72.99%
D	60-69.99%
F	<59.99%

The grade cutoffs may be shifted *downward* at the end of the semester based on student performance (never upward).

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## COVID-19-related expectations

### **Wearing face coverings in classrooms is required**

Face coverings that cover both your nose and mouth are required in all indoor spaces and all enclosed or partially enclosed outdoor spaces. MSU requires all students to wear face masks or cloth face coverings in classrooms, laboratories and other similar spaces where in-person instruction occurs. MSU requires the wearing of masks in physical classrooms to help mitigate the transmission of SARS-CoV-2, which causes COVID-19. The MSU community views the adoption of these practices as a mark of good citizenship and respectful care of fellow classmates, faculty, and staff.

The complete details about MSU's mask requirement can be found at <https://www.montana.edu/health/coronavirus/index.html>.

These requirements from the Office of the Commissioner of Higher Education are detailed in the MUS Healthy Fall 2020 Guidelines, Appendix B.

For more information: <https://www.montana.edu/health/coronavirus/prevention/index.html>

Compliance with the face-covering protocol is expected. If a you do not comply with a classroom rule, you may be requested to leave class. Section 460.00 of the MSU Code of Student Conduct covers “disruptive student behavior.”

### **Accommodations for not wearing a mask**

Individuals whose unique and individual circumstances require an exception to the face covering requirement, as indicated by a medical professional, may request one in accordance with the campus ADA policies. Students should contact the Office of Disability Services at 994-2824 or [drv@montana.edu](mailto:drv@montana.edu) to receive written permission from the Office of Disability Services at MSU. It is strongly recommended that students make contact prior to arriving on campus in order to provide adequate time for their request to be evaluated.

### **Health-related class absences**

Please evaluate your own health status regularly and refrain from attending class and other on-campus events if you are ill. MSU students who miss class due to illness will be given opportunities to access course materials online. You are encouraged to seek appropriate medical attention for treatment of illness. In the event of contagious illness, please do not come to class or to campus to turn in work. Instead notify us by email about your absence as soon as practical, so that accommodations can be made. Please note that documentation (a Doctor's note) for medical excuses is not required. MSU University Health Partners—as part their commitment to maintain patient confidentiality, to encourage more appropriate use of healthcare resources, and to support meaningful dialogue between instructors and students—does not provide such documentation.

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## Diversity and inclusivity statements

Respect for Diversity: It is our intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is our intent to present materials and activities that are respectful of diversity: gender identity, sexual orientation, disability, age, socioeconomic status, ethnicity, race, religion, culture, perspective, and other background characteristics. Your suggestions about how to improve the value of diversity in this course are encouraged and appreciated. Please let us know ways to improve the effectiveness of the course for you personally or for other students or student groups.

In addition, in scheduling exams, we have attempted to avoid conflicts with major religious holidays. If, however, we have inadvertently scheduled an exam or major deadline that creates a conflict with your religious observances, please let us know as soon as possible so that we can make other arrangements.

Support for Inclusivity: We support an inclusive learning environment where diversity and individual differences are understood, respected, appreciated, and recognized as a source of strength. We expect that students, faculty, administrators and staff at MSU will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own.

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## Policy on academic misconduct

Students in an academic setting are responsible for approaching all assignments with rigor, integrity, and in compliance with the University Code of Student Conduct. This responsibility includes:

1. consulting and analyzing sources that are relevant to the topic of inquiry;
2. clearly acknowledging when they draw from the ideas or the phrasing of those sources in their own writing;
3. learning and using appropriate citation conventions within the field in which they are studying; and
4. asking their instructor for guidance when they are uncertain of how to acknowledge the contributions of others in their thinking and writing.

When students fail to adhere to these responsibilities, they may intentionally or unintentionally "use someone else's language, ideas, or other original (not common-knowledge) material without properly acknowledging its source" <http://www.wpacouncil.org>. When the act is intentional, the student has engaged in plagiarism.

Plagiarism is an act of academic misconduct, which carries with it consequences including, but not limited to, receiving a course grade of "F" and a report to the Office of the Dean of Students. Unfortunately, it is not always clear if the misuse of sources is intentional or unintentional, which means that you may be accused of plagiarism even if you do not intentionally plagiarize. If you have any questions regarding use and citation of sources in your academic writing, you are responsible for consulting with your instructor before the assignment due date. In addition, you can work with an MSU Writing Center tutor at any point in your writing process, including when you are integrating or citing sources. You can make an appointment and find citation resources at [www.montana.edu/writingcenter](http://www.montana.edu/writingcenter).

**In STAT 216, students involved in plagiarism on assignments (all parties involved) will receive a zero grade on that assignment. The second offense will result in a zero on that assignment, and the incident will be reported to the Dean of Students. Academic misconduct on an exam will result in a zero on that exam and will be reported to the Dean of Students, without exception.**



[More information about Academic Misconduct from the Dean of Students](#)

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