

STAT 216: Introduction to Statistics

Spring 2021 Syllabus

Contents

Instructor contact information	2
Student Success Coordinator	2
Assistant Coordinator	2
Course Supervisor	2
Course calendars	2
Course description	2
MUS STAT 216 learning outcomes	3
CORE 2.0	3
Prerequisites	3
Course materials and resources	3
Online textbook and coursepack	3
RStudio	4
Learning management tools	4
Course format and organization	4
Online section format	4
Course assessment	5
Case study and discussion (5%)	5
Videos (5%)	5
Activities (10%)	5
Assignments (30%)	6
Midterm exams (30%)	6
Group project (20%)	6
Letter grades	7
Late work policies	7
COVID-19-related expectations	8
Wearing face coverings in classrooms is required	8
Accommodations for not wearing a mask	8
Health-related class absences	8
Diversity and inclusivity	9
Policy on academic misconduct	9

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

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Assistant Coordinator

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Course Supervisor

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Course calendars

- STAT 216 calendar for students in...
 - Monday cohorts
 - Wednesday cohorts
 - Friday cohorts
 - Online sections
 - MSU academic calendar
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Course description

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.

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.).

Course materials and resources

Online textbook and coursepack

Two “textbooks” are required for this course:

1. *Montana State Introductory Statistics with R* — our free, online textbook
2. *STAT 216 Coursepack* — workbook with reading guides and in-class activities

The *Stat 216 Coursepack* of in-class activities is available for purchase in the MSU Bookstore. Students are expected to bring the coursepack to class each day and to complete the activities within the coursepack.

The coursepack is currently being printed and will be available for purchase through the MSU Bookstore starting **Monday, January 11**. You may purchase the coursepack in person, or you may purchase online and have the coursepack shipped to you. Chapter 1 of the coursepack is provided here if you do not have the coursepack by your first day of class.

- *STAT 216 Coursepack*: Preface
- *STAT 216 Coursepack*: Chapter 1

RStudio

We will be using the statistical software R through the IDE RStudio for data visualization and statistical analyses.

You will access this software through the MSU RStudio server: rstudio.math.montana.edu. Your username is your NetID, and your password is the password associated with your NetID.

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

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, including concept check video quizzes embedded in the videos,
- read that week's **case study** and answer **discussion questions** on the case study via D2L,
- complete one **assignment** in Gradescope.

Online sections are 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.*

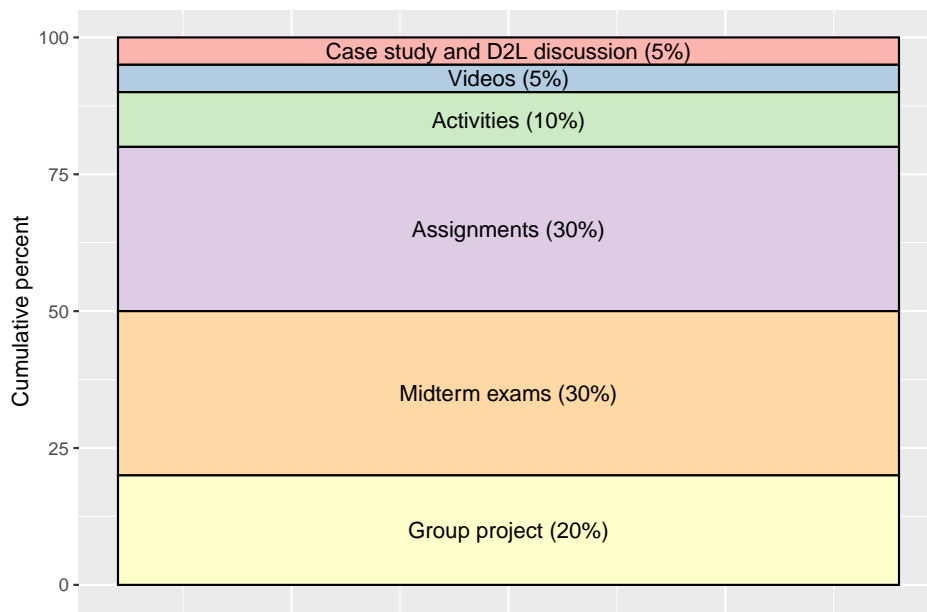
Online section format

STAT 216 online sections will operate similarly to the blended sections; the only difference will be that the in-class activities are completed online rather than face-to-face, and exams will differ in format and be conducted via Gradescope. Online students will complete their readings, videos and video quizzes, case study discussions, assignments, and group project in the same way as the blended sections. Online students will

complete the “in-class” activities through watching a guided video posted in D2L, and working through the activity during the video.

Course assessment

Your grade in STAT 216 will contain the following components.



Case study and discussion (5%)

Each week, you will read a case study and answer reading questions on that case study, then post answers to discussion questions in the D2L Discussion Forum. You are expected to contribute **2 discussion posts per week** — **one original post and one reply to a classmate**.

- *All sections:* Discussion posts on case studies will be due in D2L each **Sunday by 11pm MST**.
- The lowest two case study discussion posts will be dropped.

Videos (5%)

You will be expected to complete the assigned textbook reading and D2L videos using the reading guides provided in the coursepack prior to attending the in-class activity for each week. Concept check quiz questions will be embedded in the videos up through the due date. Up until the deadline, you can retake the video quizzes as many times as you like (the most recent grade will be recorded 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.) After the due date, videos will still be available to review, but quiz questions will no longer be included in the video.

- *Blended sections:* Video quizzes are due by the **start of your in-class period for the week**.
- *Online sections:* Video quizzes are due each **Friday by 11pm MST**.
- No video grades will be dropped.

Activities (10%)

Blended sections:

You will meet with your cohort and instructor once per week to work through that week's coursepack group activity. Attendance and completion of the activity counts towards this portion of your grade.

- Activities must be completed on the activity worksheet. If you prefer to complete the activity on a pdf copy using a stylus-enabled device, please speak to your instructor, and he or she will provide you with the appropriate materials.
- Activities will be checked for completion, both the in-class portion and the out-of-class portion of the activity, at the **beginning of the following class period**.
- If you have an excused absence the day the activity is due (e.g., quarantine or ill), you may email your instructor a scanned copy of the completed activity for credit. This must be received by **11pm MST on class day**.
- The lowest activity grade will be dropped.

Online sections:

Each week, you will work through that week's coursepack group activity while watching a guided activity video on D2L. Completion of the activity counts towards this portion of your grade.

- Activities must be completed on the activity worksheet. If you prefer to complete the activity on a pdf copy using a stylus-enabled device, please speak to your instructor, and he or she will provide you with the appropriate materials.
- Completed activities, including both the "in-class" and "out-of-class" portions, are due in Gradescope each **Friday by 11pm MST**.
- The lowest activity grade will be dropped.

Assignments (30%)

You will complete weekly assignments in Gradescope.

- *Blended sections:* Weekly assignments will be due **by 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.)
- *Online sections:* Weekly assignments will be due each **Wednesday by 11pm MST**, starting in the second week of classes.
- The lowest assignment grade will be dropped.

Midterm exams (30%)

There will be two in-class midterm exams (worth 15% each). Details and instructions for each exam will be posted the week prior to the exam in D2L.

Blended sections:

Midterm exam 1 will be during the week of **February 22–26**; Midterm exam 2 during **April 12–16**. 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 for your exam, taken in-class during your cohort's scheduled in-class time.

Online sections:

Midterm exam 1 will be on **Friday, February 26**; Midterm exam 2 will be on **Friday, April 16**. The exam will be taken in Gradescope. The exam window will be open 6am–11pm on exam day, and you will have 75 minutes from the time you start the exam or until 11pm (whichever comes first) to complete the exam.

Group project (20%)

Throughout the semester you will complete a group project. The project will involve a complete data analysis on a research question of your choice based on a study you design and data you collect from the virtual

human population of The Islands.

Detailed project instructions can be found at: <http://bit.ly/stat216-project-s21>

This project is in lieu of a final exam. Video presentations will be posted in D2L and viewed by your fellow students and instructors during finals week.

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%
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).

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.

- **Case study discussion posts and assignments** (*all sections*): Case study discussion posts (D2L) and assignments (Gradescope) 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** (*all sections*): You may take the in-video quizzes as many times as you like up until the due date — the most recent quiz score will be the recorded grade for that video in D2L. Videos are available in D2L at least one week prior to the due date, so extensions on these quizzes are not given unless for extenuating circumstances that prevent the student from viewing the video for that entire period.
- **Activities** (*blended sections*): Attendance in the blended sections is required, and the in-class activity score is a proxy for attendance and engagement. 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. 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 by 11pm, and we can give you credit for your completed activity. If the activity is not received by 11pm on the day it is due, you will not receive credit unless for extenuating circumstances that prevented you from completing the activity for the entire week prior to the due date.
- **Activities** (*online sections*): Guiding videos for the activities are available in D2L at least five days prior to the due date. Thus, extensions on activities are not given unless for extenuating circumstances that prevent the student from working on the activity for that entire period.

- **Exams** (*blended sections*):
 - 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.
 - **Exams** (*online sections*):
 - 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 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.
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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 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.

Diversity and inclusivity

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.

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.

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