STAT 216: Introduction to Statistics

Fall 2025 Syllabus

Course Supervisors Contact Information

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

Refer to your section's **Instructor Contact Information under Canvas Modules –> Section X Information and Notes** for your instructor and co-instructor/TA contact information and office hours.

Student Success Coordinator | Assistant Coordinator | Course Supervisor

Jade Schmidt (http://www.math.montana.edu/directory/faculty/1524571/jade-schmidt)
email: jade.schmidt2@montana.edu (mailto:jade.schmidt2@montana.edu)
Office: Wilson 2-263
Phone: (406) 994-6557

Instructor Contact Information

Your primary contact in STAT 216 is your section instructor. Please contact your instructor for absences or other day-to-day questions.

Section Instructors | Madison Alderman | Esther Birch | Jeremiah Pharr | Jade Schmidt | Melinda Yager

The list of instructors for each section/time/location is listed below. Click on the tab to find the contact information for your section instructor.

Section 001 (8 am in Romney 211): Jeremiah Pharr

Section 002 (9 am in Romney 211): Jade Schmidt

Section 003 (10 am in Romney 211): Jade Schmidt

Section 004 (11 am in Romney 211): Madison Alderman

Section 005 (12 pm in Romney 211): Jeremiah Pharr

Section 006 (1:10 pm in Romney 211): Melinda Yager

Section 007 (2:10 pm in **Romney 211**): Esther Birch

Section 011 (2:10 pm in **Wilson 1-119**): Jeremiah Pharr

Section 008 (3:10 pm in **Romney 211**): Esther Birch

Section 012 (3:10 pm in **Wilson 1-119**): Jeremiah Pharr

Section 009 (4:10 pm in Romney 211*): Madison Alderman

Section 010 (5:10 pm in Romney 211): Madison Alderman

Course calendars

- STAT 216 calendar (calendars/F25-Stat216_Calendar.pdf)
- MSU academic calendar (http://catalog.montana.edu/academiccalendar/)
- MSU finals week schedule (https://www.montana.edu/registrar/Schedules.html) (be sure to view the **Final Week Common (Combined) Section Groupings**)

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 using statistical software.
- 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:

1. Interpret and draw inferences from mathematical models such as formulas, graphs, diagrams or tables.
2. Represent mathematical information numerically, symbolically and visually.
3. 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 M090 or the M063/M090 co-requisite
- Level 30 on the Math Placement Exam (http://www.montana.edu/testing/MPLEX.html) 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 (http://www.math.montana.edu/undergrad/documents/MHiearchyFlowchart.pdf) 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* (https://mtstateintrostats.github.io/IntroStatTextbook/) — our free, online textbook
2. *STAT 216 Coursepack* — workbook with key topics, video notes, in-class activities, and labs

The *Stat 216 Coursepack* of in-class activities is available for purchase in the MSU Bookstore (https://www.msubookstore.org/). You may purchase the coursepack in person, or you may purchase online and have the coursepack shipped to you. Students are expected to bring the coursepack to class each day and to complete the activities within the coursepack.

RStudio

We will be using the statistical software R (https://www.r-project.org/) through the IDE RStudio (https://rstudio.com/products/rstudio/) for data visualization and statistical analyses.

You will access this software through the MSU RStudio server: rstudio.math.montana.edu (https://rstudio.math.montana.edu/). Your username is your NetID email address (in the form x11x123@student.montana.edu (mailto:x11x123@student.montana.edu)), and your password is the password associated with your NetID.

- Please note: Your NetID password expires every 6 months. It is HIGHLY recommended that you reset your NetID password BEFORE attempting to log in to the RStudio server. You can reset your NetID password in the MSU password portal (https://pwreset.montana.edu/react/).

See the Statistical Computing (https://mtstateintrostats.github.io/IntroStatTextbook/rstudio.html#alternative-options-for-accessing-rstudio) section in the Welcome chapter of our textbook for alternative options for accessing RStudio.

Required course software

All students are required to have a word processor and spreadsheet software installed on the personal device they plan to use for this course. We *highly* recommend the use of Word and Excel. If you do not currently have Word and/or Excel installed on your device, you can download the Microsoft Office 365 for Students for free by following the instructions here (https://coe.montana.edu/it/students/student-software.html).

Learning management tools

- **Canvas** (https://montana.instructure.com/): Find your instructor and co-instructor/TA contact information, announcements, instructor notes, exam review material, assignment and data files, discussion forums, gradebook.
    - *Important*: Be sure to use the help videos (https://www.montana.edu/ecat/help/learners/) provided by Montana State to learn how to navigate the learning management system, including setting your account up to receive notifications in a timely manner for any new announcements or materials posted!

    - If you have a question about the course materials, computing, or logistics, please post your question to your Canvas discussion board instead of emailing your instructor. This ensures all students can benefit from the responses. Other students are encouraged to respond.
- **Gradescope** (https://www.gradescope.com/): All work for this course will be turned into Gradescope. We recommend accessing Gradescope from WITHIN Canvas (in the Assignments tab) to complete the work and view feedback after grading is completed.
- **Mathematics and Statistics Center** (https://math.montana.edu/undergrad/msc/index.html): Free drop-in tutoring for 100- and 200-level math and stat courses in Romney Hall 220.

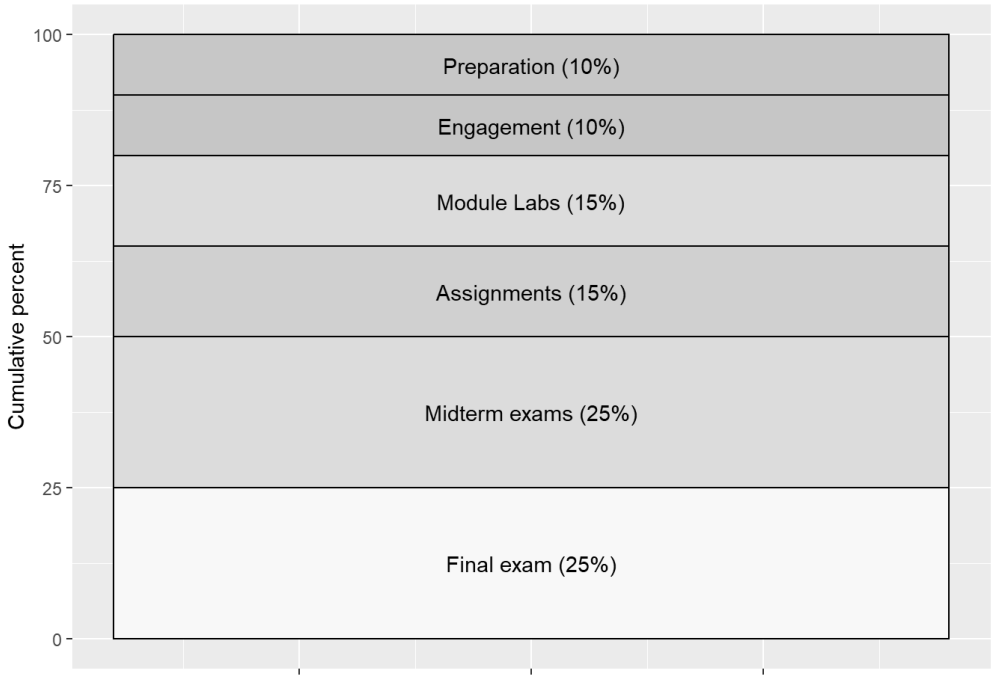
Course format and organization

Stat 216 will meet 3 times per week.

- During class meetings, students will **complete** activities and labs in assigned groups with the assistance of the teaching team.
- Per the STAT 216 calendar (calendars/F25-Stat216_Calendar.pdf), the course will be broken down into modules and units.
- To begin each module, students will
    - **read** assigned sections of the online textbook on that topic's content.
    - **watch** assigned videos on Canvas and complete the video notes located in the Stat 216 coursepack **(video note completion is checked in class)**
    - *OPTIONAL*: students may complete **video/reading** quizzes on Gradescope to check their understanding at any point during a module.
- **Activities** will take place during class in assigned teams with the assistance of the instruction team. Select problems from the activity will be turned into Gradescope before class ends.
- After all activities within a module have been completed, students will complete a **Module Lab** during class time. The lab will serve as a review of key concepts from the module. Select problems from the lab will be turned into Gradescope before class ends.
- After all modules within a unit are complete, students will complete a **Midterm Exam** over the topics covered.
- Students will also complete one **assignment** in Gradescope (https://www.gradescope.com/) per week, typically due on Mondays.

Course assessment

Your grade in STAT 216 will contain the following components.



Preparation (10%)

To begin each module, you will be expected to complete the assigned textbook reading, watch the assigned videos in Canvas and take complete guided notes on the videos prior to class. Guided video notes are found in the coursepack and will be checked off at the start of class the first day of the new module.

- Guided video notes, found in the coursepack purchased from the MSU Bookstore, will be **checked for completion at the start of class the first day of a new module**.
- OPTIONAL: You can complete video/reading quizzes, which are found on Gradescope, to check your understanding at any point during a module. You can check your answers after each question by using the Save button. If an explanation appears after you have saved your answer, that indicates your answer was correct.

Engagement (10%)

Every class day, you will meet with your classmates and instructor team to work through that day's coursepack group activity. Attendance and completion of the in-class activities and exit tickets (reviewing select questions from the activity) counts towards this portion of your grade.

- Activities must be completed in the Stat 216 Coursepack. **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 a PDF copy of the coursepack.**
- As a group, you will submit an 'exit ticket' (answers to select questions from the activity) to **Gradescope at the end of each class period**.
- Activities will be checked for completion at the **beginning of the following class period**.
- Policy for missed activities:
    - We will not record or post lectures/asynchronous learning opportunities.
    - Students get a "free pass" for up to three activities per Unit, no questions asked, *but students are expected to communicate any absences with their section instructor*. Illnesses/emergencies/school-related absences are included in these three; if students have extraneous circumstances, they are encouraged to talk to their instructor.

    - For illnesses or when students cannot attend class, we recommend that the student video conference into class with their group. Students attending class remotely can show their activity via video conference for credit. Video conferencing should be set up by students' teammates. If the student is uncomfortable asking, the instructor can facilitate that conversation (e.g., email the students' teammates, cc'ing the student, and ask if anyone can setup a WebEx meeting for class).
    - Students who are unable to attend class remotely AND e-mail their instructor **the day of the missed class** regarding an absence will be allowed a 24-hour extension to complete the exit ticket.
- The three (3) lowest exit ticket grades EACH unit will be dropped.

Module Labs (15%)

After a module has been completed, you will meet with your classmates and instructor team to work through a RStudio group lab, which is provided in your coursepack and will be completed during class time. The lab will reinforce the topics learned in the activities but with the use of RStudio for exploring and analyzing data.

- Each group will turn in selected questions from the lab to Gradescope. Labs are due **at 9 pm Mountain Time on dates indicated on the course calendar**.
- The lowest (1) lab grade will be dropped at the end of the semester.
- Each student will also have the lab checked for completion at the **beginning of the following class period** for that class period's Engagement grade.

Assignments (15%)

You will complete weekly assignments in Gradescope (https://www.gradescope.com/). These should be completed individually (meaning all answers should be written in your own words), but you may use your classmates, tutors, or your instructor/co-instructor/TA for assistance.

- Weekly assignments are due **Monday at 9pm Mountain Time each week, covering the previous week's content**.
- The lowest (1) assignment grade will be dropped at the end of the semester.
- Please review the discussion of the use of AI on assignments.

Midterm exams (25%)

There will be two midterm exams, each consisting two parts: a group portion and an individual portion. Both portions will be taken in class during your normal in-class time on subsequent days. A practice group exam will be completed in class the class meeting prior to the group portion of the midterm. A practice individual exam will be released in Canvas one week prior to the exam, with solutions to the practice exam released the Sunday prior to the exam. Further details, resources, and instructions for each exam will be posted the week prior to the exam in Canvas.

Group portion:

Group midterm exams will be **Wednesday September 17th and Monday October 20th (during normal class time)**.

- The group portion of the midterm exams will be worth 20% of your midterm exam grade.
- The group midterm exams are open book, open resources provided by Stat 216 instructors (anything posted to Canvas or feedback found in Gradescope)

- You will be allowed a calculator on the group midterm exams.
- You **will** be required to use RStudio on the group midterm exams.
- **If you miss more than 3 class days in a unit, you must complete the group midterm exam for that unit individually.**

Individual portion:

Individual midterm exams will be **Friday September 19th and Wednesday October 22nd (during normal class time)**.

- The individual portion of the midterm exams will be worth 80% of your midterm exam grade.
- The individual midterm exams are closed book, closed note.
- You will be allowed to create a one page note sheet for each individual exam. You will also be provided a one page formula sheet during the exam.
- You will be allowed a calculator on the individual midterm exam.
- You will **not** be required to use RStudio on the individual midterm exams.

Final exam (25%)

The final exam will consist of two parts: a group portion and an individual portion. The group final exam will be taken in class during your normal in-class time on the final Wednesday and Friday of classes (prior to Finals week). A practice individual exam will be released in Canvas one week prior to the exam, with solutions to the practice exam released in Canvas the Sunday prior to the exam. Further details, resources, and instructions for each exam will be posted the week prior to the exam in Canvas.

The individual final exam is a common hour exam with the date/time set by the Registrar. **Understand that attending that common hour exam is part of your commitment when you enroll in the course.**

Group portion:

Group final exam will be **Wednesday December 3rd and Friday December 5th (during normal class time)**.

- The group portion of the final exam will be worth 20% of your final exam grade.
- The group final exam is open book, open notes.
- You will be allowed a calculator on the group final exam.
- You **will** be required to use RStudio on the group final exam.
- **If you miss more than 3 class days in Unit 3, you must complete the group final exam individually.**

Individual portion:

Individual common hour final exam will be **TBD**.

- The individual portion of the final exam will be worth 80% of your final exam grade.
- No potential final exam questions will be released.
- The individual final exam is closed book.
- You will be allowed to create a one page note sheet for the exam. You will also be provided a one page formula sheet during the exam.
- You will be allowed a calculator on the individual final exam.
- You will **not** be required to use RStudio on the individual final exams.
- Understand that attending that common hour exam is part of your commitment when you enroll in the course.

Letter grades

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

Letter Grade	Weighted Score
A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	70-76%
D	60-69%
F	<59%

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

Late work policies

Note: we **highly** recommend saving your answers for each question while you complete all work in Gradescope. This will ensure you can return to labs, exit tickets, or assignments at a later date without fear of losing any progress. Additionally, Gradescope will automatically submit any saved work when the due date passes, ensuring you earn up to full credit for all problems completed on time.

- **Assignments**:
  - For assignments, while the due dates are 9 pm on Mondays, you will be allowed to turn in work until 11:59 pm on the due date. Assignment submissions that are received between 9 pm and 11:59 pm will receive a 5% grade deduction. Extensions on assignments are not given unless extenuating circumstances are present which are communicated to the Student Success Coordinator, Jade Schmidt (jade.schmidt2@montana.edu).
- **Exit Tickets and Labs**:
  - You may take the exit tickets and labs in Gradescope as many times as you like up until the due date using the Resubmit button to re-open an assessment.
  - If you miss class and email your section instructor about your absence **the day class is missed**, you will be given a 24-hour extension to complete the exit ticket or lab.
  - If possible, it is highly recommended to attend class virtually (via video conferencing with your group) to complete the lab or exit ticket with your team.
  - Further extensions on exit tickets or labs, or when an absence is not communicated prior to class time, are not given unless extenuating circumstances are present. Please email the Student Success Coordinator, Jade Schmidt (jade.schmidt2@montana.edu) if you feel your missed exit ticket or lab falls into this category.

    - For labs, while the due dates are 9 pm on the day the lab is completed in class, you will be allowed to turn in work until 11:59 pm on the due date. Lab submissions that are received between 9 pm and 11:59 pm will receive a 5% grade deduction.

- **Exams**:
    - Students that are in quarantine but healthy enough to take the exam should email Student Success Coordinator Jade Schmidt (mailto:%20jade.schmidt2@montana.edu) to make alternative arrangements. The group exams may be taken remotely and proctored via WebEx but all individual exams must be taken in person.
    - If you are ill to the point of not being able to take the exam, please email Student Success Coordinator Jade Schmidt (mailto:%20jade.schmidt2@montana.edu) to make alternative arrangements.
    - 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.

COVID-19 policies and health-related class absences

Face masks are recommended, but not required, for students, faculty and staff indoors on campus.

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 (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, assignments that include the same wording as another student, regardless of whether that student was cited in your sources, will be considered plagiarism and will be treated as such. 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 (https://www.montana.edu/deanofstudents/academicmisconduct/academicmisconduct.html)

Policy on intellectual property

This syllabus, course lectures and presentations, and any course materials provided throughout this term are protected by U.S. copyright laws. Students enrolled in the course may use them for their own research and educational purposes. However, reproducing, selling or otherwise distributing these materials without

written permission of the copyright owner is expressly prohibited, including providing materials to commercial platforms such as Chegg or CourseHero. Doing so may constitute a violation of U.S. copyright law as well as MSU's Code of Student Conduct.

Policy on the use of AI language models

In this course, you may utilize generative AI language models, including ChatGPT, as a resource to support your work outside of class (during class, you should seek assistance from group members or instructors). AI language models are powerful tools developed to generate text based on the input provided. **While the AI language models can help refine your writing and coding, it is important to remember that it is an AI system and not a substitute for your critical thinking and creativity. Due to the nature of statistics and this course, an AI-generated answer may be incomplete, overly complex, or even incorrect.** If you do not understand a concept or a question asked, we *highly* recommend visiting the Math and Stats Center (https://math.montana.edu/undergrad/msc/), emailing or visiting with a member of your instructional team, or using the search feature within the online textbook before turning to Google or AI.

If you choose to use this tool, apply it as a supplement and do not rely solely on its suggestions. Ultimately, you are responsible for the content and quality of your work. Therefore, you should critically evaluate ChatGPT outputs for accuracy, potential bias, and relevancy. When utilizing AI language models, it is essential to ensure that your writing and coding remains original and properly attributed, including citing outputs or text generated by ChatGPT. **If you choose to use AI language models to assist you on labs or assignments, you must cite the source used. Failure to do so will result in earning a 0 on all problems in which AI language models usage has been detected.**

Please see the How to cite ChatGPT in MLA Style resource (https://style.mla.org/citing-generative-ai/). We encourage you to use AI language models to enhance your writing and coding skills, experiment with its capabilities, and learn from its suggestions. If you have any questions or concerns regarding using AI language models for assignments, please discuss them with us.