

University of Montana

## ScholarWorks at University of Montana

---

University of Montana Course Syllabi, 2021-2025

---

Spring 2-1-2022

### STAT 216.B01: Introduction to Statistics

Lauren Sara Fern

*University of Montana, Missoula*, [lauren.fern@umontana.edu](mailto:lauren.fern@umontana.edu)

Follow this and additional works at: <https://scholarworks.umt.edu/syllabi2021-2025>

**Let us know how access to this document benefits you.**

---

#### Recommended Citation

Fern, Lauren Sara, "STAT 216.B01: Introduction to Statistics" (2022). *University of Montana Course Syllabi, 2021-2025*. 45.

<https://scholarworks.umt.edu/syllabi2021-2025/45>

This Syllabus is brought to you for free and open access by ScholarWorks at University of Montana. It has been accepted for inclusion in University of Montana Course Syllabi, 2021-2025 by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact [scholarworks@mso.umt.edu](mailto:scholarworks@mso.umt.edu).

**STAT 216 – Introduction to Statistics B01**  
**Grading and Policies Spring 2022**

**Contact Professor:**

- ✓ **Professor:** Lauren Fern
- ✓ **Email:** [fern1@mso.umt.edu](mailto:fern1@mso.umt.edu)

**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?

**Prerequisites:** M 115 (Probability and Linear Mathematics) or 3 or more credit math course numbered 121 or above.

**Learning Outcomes: Upon completion of this course, students will be able to:**

1. describe and explore sets of data both numerically and graphically.
2. know how to use the normal model for the distribution of a single variable and the linear regression model for the relationship between two variables.
3. know the basic principles of good experimental design and good sampling design.
4. know the fundamental ideas of statistical inference for means and proportions including both hypothesis testing and confidence intervals.
5. interpret confidence intervals and P-values in the context of real problems.
6. be a critical consumer of statistical studies reported in the media.

**General Education Learning Outcomes:**

Upon completion of the mathematical literacy requirement, a student will be able to effectively apply mathematical or statistical reasoning to a variety of applied or theoretical problems.

**Class Format:**

This class is a blended/hybrid class which allows for many ways to ‘attend’ and fully participate. I will be teaching the class in person on Mondays and Wednesdays from 3:00-4:30 in MC 230 for those who prefer/are able to attend the face to face class. For those who are unable to attend in person, but would still like to participate in the class ‘live’ you are welcome to zoom in at the following link: <https://umontana.zoom.us/j/6389684081> For those who are unable to attend during the class time, I will be recording every class so students can also get the material using a class box folder where I will post all of the recordings and notes. <https://umt.box.com/s/bb1uzdrwfpd9kcyxfxxee7tfcq1yvejo>

**For those students who will doing this class remotely, the only thing I require is that you stay up to date on all announcements and due dates. Missing class is not an excuse for handing in an assignment late. In terms of the homework, worksheets, etc, I will work with each of you on a mutually convenient way for you to submit all assignments.**

**Computing Information:** StatCrunch statistical software will be used by the instructors during class and will also be required for some homework problems throughout the course. This software can be accessed within MyStatLab.

**Textbook:** Intro Stats (5th ed.), by DeVeaux, Velleman, & Bock. You automatically have access to the online textbook and resources through Moodle (unless you choose to ‘opt out’ of the tuition billing system). Course Pack: There is a printed course pack we will use for notes, available on moodle as well as our box folder.

Your digital course materials are provided by the University of Montana Bookstore through Moodle at a discounted rate the bookstore has negotiated on your behalf. Your specially discounted price is included with your course fee, but you have the option to opt out of the program to have that cost refunded to your student account. If for any reason you decide to purchase your materials elsewhere you can opt out of this program by the add/drop deadline on February 1st, 2022, 11:59PM MST and you will receive the refund later in the term.

For any questions about billing, please contact Amanda Peterson at [amanda.peterson@mso.umt.edu](mailto:amanda.peterson@mso.umt.edu).

For any questions about using your eBook, please reference [RedShelf Solve](#).

**If your course is using an eBook:**

- Click the RedShelf link in your course's module in Moodle.
- Click View Course Materials.
- Click Start Reading

**To opt out:**

- Click the RedShelf link in your course's module in Moodle
- Click View Course Materials
- Scroll down to the gray opt-out button and follow the prompts

**\*Note: If your course is using a publisher's homework platform, you will only use RedShelf to retrieve your access code if required or to opt-out by following the instructions above.**

If you have additional questions about how to access course materials, please contact Amanda Peterson at [amanda.peterson@mso.umt.edu](mailto:amanda.peterson@mso.umt.edu).

**Calculators:** Since Math 115 is a prerequisite for this course, it is expected that you either:

- (a) already own a calculator suitable for this class and that you also know how to use it. Your calculator should, among other things, be able to calculate probabilities from the Binomial, Normal, and t-distributions. If you are thinking about purchasing a calculator for this course, students tend to be the most comfortable with the TI-83/84 or TI-83/84 Plus. Or
- (b) have used online calculators to perform statistical computations.

**Grading:**

Your course grade will be based on the following:

- 30% of your grade: Group Worksheets, with the lowest dropped
- 30% of your grade: Hand-In homework, with the lowest dropped
- 30% of your grade: Statistical Investigations
- 10% of your grade: Online Homework, with the lowest dropped

Please note that this class is highly interactive hence attendance and participation are essential for success in the class. You are expected to be in class every day it meets or access the recordings and notes. **Late assignments will not be accepted, you will have plenty of notice prior.**

When any assignment is returned, there is one week from the date of return for contesting the grading or revising, as allowed. After that time, the grade will be accepted as final. All assignments to be turned in are announced well before-hand and an email will also be sent to the class alerting you of an upcoming due date. It is your responsibility to keep up to date on all such announcements. **Because you have the right to revise, your grade is literally in your hands.**

<i>Grade</i>	<i>Grading Scale by Percentages</i>
A	90%+
B	89-80%
C	79-65%

<i>Grade</i>	<i>Grading Scale by Percentages</i>
D	64-55%
F	Less than 55%
CR	≥ 55%

\*\*\* If you are taking this course to fulfill a general education requirement or a requirement for your major or minor, you must take it for a traditional letter grade (not CR/NCR). If you decide anyhow to take this course with CR/NCR grading, a grade of “D-“is considered passing and will earn you credit for the course, BUT it will NOT fulfill your general education requirement NOR any requirement for your major or minor.\*\*\*

**“Hand-in” Homework:** Assignments will be posted on Moodle. It is expected that you type the answers into this document or neatly write in your work when appropriate. This course largely focuses on teaching you how to interpret and analyze data. I ask you to use correct grammar and spelling while providing clear and concise explanations. Homework is not only a fairly substantial portion of your grade, but it is vital to your success in this class. Working with other students on homework is allowed and encouraged, as long as you hand in your own work, and do not simply copy someone else's work. Solutions to all problems from each assignment will be posted on Moodle.

**Online Homework:** You will access your online homework problems and other textbook resources through Moodle (MyStatLab). To initially gain access to this system, use the information posted at the top of our Moodle page. Once you go through this initial login procedure, you will automatically have access to MyStatLab resources for the rest of the semester through your Moodle page.

**Worksheets:** During the class sections you will have the opportunity to ask questions about course material and work on problems with other students in small groups. You will complete a worksheet most weeks. The intent of the worksheets is to have you practice using statistical methods and to promote cooperative learning. Completing the worksheets in groups will allow you to discuss ideas and problems with other students. Your worksheet grade will reflect both your own work and the work of your group.

**Statistical Investigations:** Investigations are the primary means by which we will assess your statistical reasoning. There will be three or four statistical investigations, one for each unit (time permitting). The investigations are due on the Wednesday after the end of the unit. I will provide more information about investigations later in the course.

- You may use any resources, including other people, to help you with your investigations.
- Remember, you have the right to revise your thinking. You may revise and resubmit your investigations for full credit, based on feedback.

**Recommended Problems:** Additional recommended problems will be assigned but not collected from each chapter, with answers provided in the back of the textbook. You are encouraged to work all of these problems.

**Study Advice:** COME TO CLASS! STUDY THE NOTES! BE AN ACTIVE LEARNER! Read through the notes to be covered **before** coming to class and review them after class. Print the notes from moodle. This will reduce the volume of notes you will need to take in class and you will get more out of the class. Read the textbook to solidify your understanding of the topics introduced during lecture. Doing your homework as well as the additional recommended problems **conscientiously** will greatly increase your chance of success in this class. **\*\*Plan to spend 2 hours outside of class for each hour of class – Seriously!**

**HELP WITH COURSE CONTENT: Confusion is part of learning. The key is not to avoid confusion, but to embrace it, and to get help.**

#### **Add/Drop Policies:**

The last day to add/drop or change grading option to Audit by Cyberbear is **2/7**. The last day to change sections and to change grading options is **3/29**. This is also the last day to drop. Changes after this deadline and until **5/6** must be done by Petition to Drop/Add after deadline and approved by me, your advisor and the appropriate Dean. Approval requires genuine extenuating circumstances as listed in the university catalog.

Extenuating circumstances are:

1. Missing a substantial number of classes due to illness, accident or family emergency.
2. A change in work schedule that makes it impossible to attend class or devote adequate time to the course.
3. Registration in the course by error and never attending class.

Reasons that are not satisfactory include:

1. Forgetting to turn in a drop slip.
2. Protecting your grade point average.

### **Incomplete (I) Grades:**

To be eligible for an “I”, the following conditions must be met:

1. The student must have been in attendance and passing the course up to 3 weeks before the semester ends; and
2. The student is unable to complete the course due to extenuating circumstances, which usually means serious illness or death in the family.

Incompletes are not given under any other circumstances and are always given at the discretion of the instructor. See the 2021-2022 catalog for further information.

### **Misconduct:**

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

### **Disability modifications:**

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Office for Disability Equity](#). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will work with you and Disability Equity to provide an appropriate modification.

### **Important University-Wide Info and Dates:**

- Monday, February 21: Presidents Day. No school.
- Monday-Friday, 21-25 March: Spring Break. No school.

### **Student expectations:**

**Attendance:** Attendance, whether in person, on zoom, or by accessing the recordings and notes, is a required component of the course. You are responsible for obtaining all assignments and announcements, and being prepared for the next class.

**Email:** Students are expected to maintain an active email account and to check email daily.

**Preparation:** Students are expected to come to all classes prepared, with assignments complete, even if they have been absent.

**Electronics:** Students are expected to keep all phones and other personal electronics away/off during class. Calculators and laptops being used for class work will be acceptable.

**Participation:** A portion of class time will be spent working in small groups. The benefit of discussion while working in small groups to develop and use mathematical concepts has been shown to increase success rates. Brain research has shown that sharing multiple viewpoints and verbally articulating questions and answers strengthens the connections your brain makes between concepts. Strong connections improve your ability to recall and use concepts. Even if you think you already understand a concept, explaining your understanding to others benefits others while strengthening your own understanding. If you ask a question of your group or class, you are providing an opportunity for good discussion, so don't be shy about asking questions! The only bad question is one that is left unasked!

### **COVID-19 Safety Procedures**

**The University of Montana is requiring mask usage in all classrooms and laboratories regardless of vaccine status.** New cases of COVID-19, predominately caused by the Delta variant of coronavirus, are increasing in Missoula County and across Montana. The University of Montana in following the Missoula City-County Health Department guidance recommends all individuals (regardless of vaccine status) also voluntarily wear a mask indoors and get vaccinated to help slow the spread of COVID-19. Because the conditions, rules, guidance, and recommendations surrounding the COVID-19 pandemic continue to evolve rapidly, these guidelines are subject to change. You are encouraged to stay up-to-date with the most current COVID-19 guidance using the resources listed at the end of these guidelines.

- If you feel sick and/or are exhibiting COVID-19 symptoms, please don't come to class and contact the Curry Health Center at **(406) 243-4330**.
- If you are required to isolate or quarantine, you will be supported, and it is the hope to ensure continued academic progress.
- Where social distancing (maintaining consistent 6 feet between individuals) is not possible, specific seating arrangements will be used to support contact tracing efforts.
- Class attendance and seating will be recorded to support contact tracing efforts.

Please refer to UM's Coronavirus [student information page](#) for more information and resources.

### **Diversity, Equity, and Inclusivity**

Missoula College values the diversity of its students, faculty, and staff as an essential strength that contributes to our shared educational mission. Students of all backgrounds and perspectives are recognized and respected in this class. Course content and activities are intended to honor diversity of gender, sexuality, ethnicity, race, culture, religion, age, disability, socioeconomic status, and all dimensions of diverse human experiences and their intersection. Please notify your instructor if components of this course present barriers to your inclusion. Students can also reach out to Dr. Salena Beaumont Hill in the [Office of Inclusive Excellence for Student Success](#), which provides student support for BIPOC and LGBTQ+ students and student groups. To explore making a formal report about discrimination or harassment, please visit the [Equal Opportunity / Title IX office](#). For counseling or advocacy related to discrimination, please visit [SARC](#).

### **Resources:**

**Student Hours:** My student/office hours are for you to seek direct help from me. I am available during all announced hours as well as other times by appointment. Please come see me with any concerns you have during the semester, especially if there is something going on that is having an impact on your ability to succeed in the class. You can also come see me during these hours for help on math, just as you would get help in the math lab. Don't wait until you are way behind to get help! It is strongly recommended that you communicate with me as much as possible so that we can work together to get you through the course successfully.

Free tutoring is available on both the Mountain and River Campuses; links and hours will be announced as soon as they are provided.

**Student:** As a student, you may experience a range of challenges that can interfere with learning, such as health: strained relationships, increased anxiety, substance abuse, feeling down, difficulty concentrating, and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. Counseling is available and treatment does help. The professional staff at Curry Health Center offers free confidential counseling to full-time students. I am always happy to help you find the resources you need.

### **A Statement on Digital Access and Equality:**

Digital devices (like laptops and cell phones) are becoming increasingly important to success in college. In this course, you may need digital devices to access readings, complete and submit written assignments, complete online quizzes, verify your attendance, take in-class polls, coordinate with other students regarding group projects, complete and submit group projects.

I recognize that some students are unable to afford the cost of purchasing digital devices and that other students rely on older, more problem-prone devices that frequently break down or become unusable. I also recognize that those technology problems can be a significant source of stress for students. Given those challenges, I encourage students to contact me if they experience a technology-related problem that interferes with their work in this course. This will enable me to assist students in accessing support.

Here is some information in case you or another student you know faces challenges securing food or housing. There are some campus resources that might be helpful:

**Food Pantry Program:** UM offers a food pantry that students can access for emergency food. The pantry is open on Tuesdays from 9 to 2, on Fridays from 10-5. The pantry is located in UC 119 (in the former ASUM Childcare offices). Pantry staff operate several satellite food cupboards on campus (including one at Missoula College). For more information about this program, email [umpantry@mso.umt.edu](mailto:umpantry@mso.umt.edu), visit the pantry's website (<https://www.umt.edu/uc/food-pantry/default.php>) or contact the pantry on social media (@pantryUm on twitter, @UMPantry on Facebook, um\_pantry on Instagram).

**ASUM Renter Center :** The Renter Center has compiled a list of resources for UM students at risk of homelessness or food insecurity here: <http://www.umt.edu/asum/agencies/renter-center/default.php> and here: <https://medium.com/griz-renter-blog>. Students can schedule an appointment with Renter Center staff to discuss their situation and receive information, support, and referrals.

The following syllabus is subject to modifications (and in all probability will be changed due to timing!). **It is your responsibility to keep up to date on all such announcements.**

<b>Monday</b>	<b>Wednesday</b>
Jan 17 MLK Day	Jan 19 Intro
Jan 24 Chapter 1	Jan 26 Chapter 2
Jan 31 Chapter 2	Feb 2 Chapter 3
Feb 7 Chapter 3	Feb 9 Chapter 4
Feb 14 Chapter 4/5	Feb 16 Chapter 5
Feb 21 Presidents Day	Feb 23 Chapter 6
Feb 28 Chapter 6	Mar 2 Chapter 7
Mar 7 Chapter 8	Mar 9 Chapter 8
Mar 14 Chapter 9	Mar 16 Chapter 10
Mar 21 SPRING BREAK	Mar 23 SPRING BREAK
Mar 28 Chapter 10	Mar 30 Chapter 11
Apr 4 Chapter 12	Apr 6 Chapter 13
Apr 11 Chapter 13	Apr 13 Chapter 14
Apr 18 Chapter 14	Apr 20 Chapter 14
Apr 25 Chapter 15	Apr 27 Chapter 15
May 2 Chapter 16	May 4 Chapter 16