



Math 1070 Section 004

Introduction to Statistical Inference

Class Hours: T/Th—2:00pm-3:20pm

Location: Wherever WiFi is Serviced



Instructor: Max Black (see photo, and no, Kalby (the dog) cannot come to class).

Email: black@math.utah.edu

Office Location: JWB 121

Office Hour: Mondays 12:00pm-12:50pm and by appointment

Please note this syllabus is subject to change throughout the semester as I see fit, **with or without notice** (though I will try notifying everyone). By not withdrawing/transferring from this class, you hereby agree to the following class policies and procedures outlined below.

Course Description: This course is a survey of the important topics used in making inferences from data. The course emphasizes material on descriptive statistics, estimation of the mean in one or two populations, simple linear regression, and one-way analysis of variance.

Prerequisite(s): Completion, with a grade of C or better, of Math 1010 or Accuplacer CLM score of 50 or better.

Important Note: The mathematics department DOES enforce prerequisites for all our undergraduate courses. If you were able to register for this class based on your enrollment in the prerequisite course last semester, and you did not receive the minimum grade in that course to continue on with your math classes, then you will be dropped from this class on Friday of the first week of classes. If that is the case for you, then it is in your best interest to drop yourself from this class before you are forcibly dropped and get into a class for which you have the prerequisites. If you have any concerns about this, please speak to the math department's administration (in other words, I have no control over this so ask the people at the front desk).

Note(s): A minimum grade of C is required to progress to further courses.

Credit Hours: 3

Text: *The Basic Practice of Statistics*, 6th Edition.

Author(s): David S. Moore et al. **ISBN-13:** 9781464102547

Course Objectives:

After successful completion of this course, students will be able to:

- summarize data using charts, graphs, histograms, and calculate basic descriptive statistics like the mean, standard deviation, median, and quartiles.
- work with the normal distribution and use z-score tables to find probabilities.
- understand the difference between correlation and causation (they're similar but very different).
- perform rudimentary regression analysis and compute correlation.
- understand the Central Limit Theorem and the normality assumption.
- understand the basics of tests of significance and confidence intervals including z-tests, t-tests, proportion tests, χ^2 tests, ANOVA, and non-parametric tests.

Grade Distribution:

Homework	10%
Quizzes	15%
Project	15%
Exam 1	20%
Exam 2	20%
Final Exam	20%

Letter Grade Distribution:

≥ 93.00	A	73.00 - 76.99	C
90.00 - 92.99	A-	70.00 - 72.99	C-
87.00 - 89.99	B+	67.00 - 69.99	D+
83.00 - 86.99	B	63.00 - 66.99	D
80.00 - 82.99	B-	60.00 - 62.99	D-
77.00 - 79.99	C+	≤ 59.99	E (this is an F)

Course Policies:

- **Online Expectations (Only Consider This Section if Being Taught Online)**

- When this course is taught online, we will submit homework assignments and exams via Gradescope **unless stated otherwise**. You will need access to a scanner or scanning app on a smart phone. If you do not have access to either, please email me and we can work out an arrangement.
- Gradescope Template: when using Gradescope for **exams**, you must follow the template that will be given. That is, there will be clearly demarcated answer portions. You must place your answers in these answer sections and your work may go elsewhere. Furthermore, the number of pages you submit must match the number of pages on the template; otherwise you will not be able to submit it. If you email me an exam that does not match the template, I will not grade it. If you cannot print the template for some reason, you may hand write your own on a piece of paper. However, you must make sure the answer boxes are in the same position and are approximately the same size.
- The class hours being held will be office hours. You are expected to have read the class notes ahead of each session. I will then answer any questions you have/will have you work problems and help you with them as issues arise. Specifically, class will be very self-motivated. **If you do not think you can do this, sign up for another section.**

- Before each class, I'll post a Zoom link in the Canvas discussions tab. You will need to look there.
- I am expecting that you are subscribed to Canvas announcements. I will make many. If you miss an announcement and this results in an error in an assignment or exam, this is on you. I will not make exceptions.
- If you have accommodations of any kind, please contact me **ASAP** so we can work out a way to accommodate you within the guidelines given by the CDA. I will do my best to provide accommodations but some notice really does make it easier.
- Concerning the tutoring center, you are now able to access it online. I will make an announcement about this in Canvas.
- I will primarily be using my math webpage for managing the class. I will upload lecture notes, old exams, assignments, etc. for your convenience, there. The address is www.math.utah.edu/black/currentTeaching (the ' ' is right under the escape button on your keyboard.)
- Some quizzes, assignments, and/or exams will involve using Excel. You should make sure that you are comfortable performing rudimentary computations in it.
- Please refer to the "Contacting Me Outside of Class" section concerning emails.
- Make sure you read the rest of the syllabus.

- **COVID Considerations**

- Since our class is online, we only have the following statement: students must self-report if they test positive for COVID-19 via coronavirus.utah.edu.

- **Attendance**

- I do not require you to attend class. However, it is *highly* recommended you do, as that is when/where I'll be answering questions and discussing concepts covered in the readings. I will also give examples/lecture points that are not covered in the notes posted. Furthermore, I may make changes to assignments, the class structure, grades, etc., and those announcements will be made in class. I will try posting these announcements in Canvas, but you may not know to check for them (unless you're subscribed to announcements).

- **Homework**

- Homework is a completion grade. However, you must make a concerted effort on every assigned problem; your work will be evidence of this effort. If, for some reason, a problem requires little work, please write 3-5 sentences explaining the concepts underlying the problem. This way, you can avoid losing points. If a problem is missing or perceptibly has no effort, then you will receive a 0 on the assignment as you will not have completed it.
- Homework will be collected at the end of class during the last session of each week.
- The two lowest homework grades are dropped from your final score; consequently, I will not accept late homework. In regards to other assignments being turned in, I will not accept them late. Late work in any case is only accepted if prior arrangements have been made between you and I. If extenuating circumstances arise, **please** contact me; however, to maintain fairness in the classroom, I will require official evidence: a letter

from the dean of students, a doctor's note, official letters from the relevant academic administrators, or, perhaps, a police report. Please keep in mind the preceding list is non-enumerative.

- I am requiring you to read the textbook. I will expect you to have read the chapter for the upcoming week before each Tuesday. That way you can come prepared with questions and can work on the in-class problems/examples.
- We will be using the problem set found in the 6th edition.
- All homework is to be handwritten. I will only make exceptions in rare circumstances. On that note, please keep in mind the course grader is not required to award points to homework that is illegible due to poor formatting, poor handwriting, ruined paper, etcetera. You will find an example of acceptable homework posted in Canvas under "files". Again, please note this is a non-enumerative list.
- If you would like to contest a grade on a homework assignment, you may do so up to a week after it has been handed back. To do this, simply speak to me after or before class and turn in the homework whose grade you are contesting with the next batch. I will personally review it and get back to you within a week. Again, exceptions will be made in extreme circumstances only. If you do not contact me about a homework grade within a week of it being handed back, the grade, whether fair or not, will stand.
- Students are encouraged to work together in groups (mathematics is a social science, after all ☺). However, your solutions are expected to be your own. That is, despite a group deriving a solution, your work and/or explanations are expected to be unique. Again, you are expected to establish authorship of a work. Any referenced work must be clearly documented, cited, and attributed, regardless of media or distribution. Even in the case of work licensed as public domain or Copyleft, (See: <http://creativecommons.org/>) you must provide attribution of that work in order to uphold the standards of intent and authorship. Please note that plagiarism will not be tolerated and will be dealt with in accordance to university policy.

- **Grades**

- Grades in the **C** range represent performance that **meets expectations**; Grades in the **B** range represent performance that is **substantially better** than the expectations; Grades in the **A** range represent work that is **excellent**.
- I do not round grades. No exceptions.
- You may find your grades under the Canvas section for this course entitled "grades". Students are required to track their progress throughout the semester and voice any concerns or questions with me through the appropriate channels of communication. Please keep in mind, Canvas will be a fairly accurate representation of your grade; final grades, however, may vary slightly.

- **Quizzes and Exams**

- Quiz and exam dates! They're not moving. They will take place according the schedule found at the end of the syllabus.
- Quizzes and Exams are closed-note, closed-book, and closed-neighbor unless otherwise stated.

- The lowest two quiz grades are dropped from your final grade. Consequently, **no makeup quizzes will be given.**
- As is a standard practice, **no make up exams will be given** unless PRIOR arrangements have been made. Please note exams will take place before breaks and you are expected to be here for them.

- **Technology**

- I am quite the luddite. And supporting my personal preference, there is an overwhelming amount of educational research showing a strongly positive correlation between memory retention rates and writing notes by hand. Consequently, I will not allow computers in the classroom; nor am I allowing cell phones—no, not even as a calculator.
- If technology is allowed during a class, I will notify you during the previous session; that way, you may plan accordingly.

- **Contacting Me Outside of Class**

- Email is the best way to reach me (see above). Please note, I answer my email once per day during the week. I rarely make exceptions. Hence, please send your emails with this in mind. Though annoying, this does make my turn-around rate roughly 24 hours, during the week. I treat weekends differently: I reserve them for my personal life (I know, hard to believe I have one). I will do my best to respond in a timely manner, but don't expect a response until Monday during my usual email time, if emailing over the weekend.
- Before emailing me, please do the following:
 - * Read the syllabus. I've designed the syllabus to answer most, if not all questions regarding class.
 - * Describe what you'd like to met about: do you want help on a problem or to discuss your grade? Etc.
 - * Make sure you have a few proposed solutions or have put some thought behind our meeting. My time is important; please do not waste it.
- Lastly, please email me using my umail: u1236813@utah.edu. **I will not respond to emails sent via Canvas.** But seriously, **I WILL NOT RESPOND TO EMAILS SENT VIA CANVAS MAIL.**

- **Student Resources**

- Some of the ideas in this class are fairly large and can be unwieldy. So, if you have questions there are a couple of places you can have them answered!
 - * My office hours: I will be in my office, (JWB 121, located in the basement) during my posted office hours (see above). Feel free to drop by with any questions, comments, and/or concerns you may have. If you are unable to attend my office hours, please email me and I'm sure we can figure something out as I am usually on campus or in my office. If you stop by unannounced, please understand I may be busy and will be unable to help you.
 - * The tutoring center: There is a **FREE** tutoring center located in the west end of the LCB basement (LCB 115). It is open Mondays-Thursdays, 8:00am-8:00pm and Fridays, 8:00am-6:00pm. The center has tutors (people who are getting their Ph.D.s

in math), a microwave, a fridge, computers (where you can print for free), and lots of space to work. I've been told you can feel free to stay there all day!

- * Private tutoring: University Tutoring Services, 330 SSB (they offer relatively inexpensive tutoring (\$7 per hour)). There is also a list of tutors at the Math Department office in JWB 233.

- **ADA Statement**

- The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access (CDA), 162 Olpin Union Building, 801-581-5020 (V/TDD). The CDA will work with you and I to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to CDA. As I am sure you are aware, if you need accommodations, it is your responsibility to give me the paperwork and take initiative in telling me what you need. We can work something out; however, I will not know what you need, if you do not tell me. So, COMMUNICATE.

- **Addressing Sexual Misconduct**

- Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status, or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
- **PRIVACY DISCLAIMER:** please feel free to talk to me about any misconduct you have heard/seen/experienced. However, if you disclose to me any form of sexual, gender-based harassment, intimate partner violence, sexual exploitations, stalking, nonconsensual sexual contact, nonconsensual sexual penetration, sexual domestic violence, sexual assault, or stalking I am, as an employee of the University of Utah, a mandatory reporter. **I am not confidential.** That is, if I am made aware of, by any means, any of the aforementioned forms of harassment, I must report it to the OEO (though I am not allowed to tell anyone else) who will then contact you. You are in no way obligated to interact with the OEO, but know they will reach out.
- If you would like a confidential listener, you may contact the counselors at the Counseling Center (801-581-6826), chaplains at the hospital (50 North Medical Drive), the Women's Resource Center (801-581-8030), the Victim Advocates (801-581-7779), Rape Recovery Center (801-467-7281), or the OEO (801-581-8365). Please remember the following: if you disclose to me, I must contact the OEO and they will, in turn, contact you; remember, you are given the option as to whether or not you'd like to follow up with a formal complaint/investigation.

- **Wellness Statement**

- Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc..., can interfere with a student’s ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at their website (www.wellness.utah.edu) or 801-581-7776.

- **Classroom Social Equity**

- I strive to be ethical, kind, fair, inclusive, and respectful in my classroom. I expect my students to behave likewise. In this regard, I have
 1. Please do tell me, discreetly, if you have any sort of anxiety disorder, TBI, PTSD, C-PTSD, or any other challenge that would cause psychological harm to you by me calling on you in class. I want students to feel a little uncomfortable and stretched during class, while working on problems as a large group, but I definitely don’t want to cause anyone harm. So, please tell me, in a way you feel comfortable, if that is the case for you and I will confidentially accommodate your request.
 2. If your preferred name is different than your legal first name (the preferred name you chose does show up in CIS on my roll sheet, but not yet in Canvas), please log into Canvas and go to Account (on far left)→ Settings and change your Display Name to be the name you prefer. This will help me greatly in knowing students’ names, and address you correctly when responding to Canvas comments/discussions.
 3. If there is ever a time that you feel this course or the curriculum is not equitable, please email me or meet with me to discuss your concerns so I have a chance to address that.
 4. If you’d like, please let me know through writing, or in person, your preferred name and/or pronoun. In return, if someone discloses their personal pronoun to you/the group, I expect you respect their identity and maintain a safe learning environment. You may not understand their personal preferences (and you don’t have to), but you must respect them. I will not tolerate disrespectful behavior (see below).

- **Classroom Respect**

- I kindly demand respectful behavior in my classroom (think “benevolent dictatorship” or “mandatory donation”). Examples of disrespect include, but are not limited to, reading a newspaper or magazine in class, social chatting with your friend in class, text-messaging during class, excessive use of your cell phone, or cuddling with your partner/friend in class. If you choose to be disrespectful with distracting behavior during our class, please keep in mind that you put me in a position of condoning your behavior OR helping the students or myself whom you are disrupting/disrespecting. I promise I will not choose you. I will kindly, yet sternly, ask you to stop. If you do not stop your disruptive/disrespectful behavior, I will leave the classroom, ending our class session early that day, and there will be a quiz during the next class.

- **Succeeding in Class**

- Two of the main ways you can succeed in class is by knowing the grading scheme and what’s expected of you. If you need further study strategies or something just isn’t working come talk to me. I will be happy to brainstorm ideas and help you maximize your mathematical understanding and studying. I will not offer any extra credit at the end of the semester or any other way for you to improve your grade at that time. No

exceptions. If you email me at the end of the semester to suggest that you deserve a chance to get a higher grade, I will forward your email to the Dean of Students office so you can get properly counseled in how to behave professionally in an academic setting. The only way to “better your grade” by the end of the semester is to retrieve your final exam and look to see if you have any grading appeals. I’m happy to look over those and possibly give points back, if warranted.

- **Lodging Complaints**

- Hopefully this section is irrelevant throughout the semester! If you feel that I have disrespected you, not accommodated you, made you feel unsafe, have harassed you in any way, etc...*please* let me know. I will be more than happy to change my behavior and work with you to make class safe and/or accessible. I strive to create a safe learning environment for all students. With that in mind, please understand I am not perfect and I am trying.
- Though you can reach out to me, I understand confronting someone who has disrespected/offended/harassed/upset/hurt you can be difficult. So, in order to lodge a formal complaint against me (for my teaching, behavior, class conduct, etc...), you may email Kelly MacArthur at macarthur@math.utah.edu; her office is located in JWB 218. Alternatively, you may contact my course coordinator, Jyothsna Sainath, at sainath@math.utah.edu or find her in her office in JWB 124. If you choose to ask either of these people for help, either of them will help you follow the appropriate procedures for lodging a formal complaint.

- **Incompletes**

- If something happens to you that is not an academic emergency that may interfere with academic work, then you may ask for an incomplete. There are strict guidelines that will be followed; please keep that in mind. Though incomplete grades are possible, me giving out an incomplete is *incredibly* rare.

- **Safety Statement**

- The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

- **Works Cited (informal)**

- The main structure and layout for this syllabus makes use of Brian R. Hall’s freely-available L^AT_EX syllabus template found on his [personal website](#).
- I have borrowed, modified, and directly copied various ideas and sections from Kelly A. MacArthur’s syllabus found on her [personal website](#) for Math 1220, Fall 2018.

Course Outline and Schedule:

The weekly coverage may change depending on the progress of the class. However, you must keep up with the reading assignments.

T, Aug. 25	Syllabus, Class Expectations, Quiz 0, Intro sheet, and Chapters 1/2. Project assigned.
Th, Aug. 27	Chapters 1/2 Questions and Problems.
T, Sept. 1	Chapter 3. HW 1 due: Ch. 1: 22, 27, 30, 31; Ch. 2: 16, 19, 22, 25, 29, 28, 30, 32, 36, 44, 52. Quiz 1.
Th, Sept. 3	Chapter 3 Questions and Problems.
T, Sept. 8	Chapter 4/5 Questions and Problems. HW 2 due: Ch. 3: 45, 47.
Th, Sept. 10	Chapters 4/5 Questions and Problems.
T, Sept. 15	Chapters 8 and 9 Questions and Problems. HW 3 due: Ch. 4: 16, 17, 18, 19, 20, 21, 26, 34; Ch. 5: 19, 20, 21, 32, 33, 37. Quiz 3.
Th, Sept. 17	Chapters 8 and 9 Questions and Problems.
T, Sept. 22	Probability Questions and Problems. HW 4 due: Ch. 8: 17, 18, 20, 21, 24, 38; Ch. 9: 20, 21, 22, 25, 29, 36. Quiz 4.
Th, Sept. 24	Probability Questions and Problems.
T, Sept. 29	Probability Questions and Problems.
Th, Oct. 1	Probability Questions and Problems.
T, Oct. 6	EXAM I. Probability worksheet due. Quiz 5
Th, Oct. 8	Chapter 10 Questions and Problems.
T, Oct. 13	Quiz 5. HW 5 due: Ch. 10: 21, 24, 26, 38, 41, 43.
Th, Oct. 15	Chapter 11 Questions and Problems.
T, Oct. 20	Chapters 14/15 Questions and Problems. HW 6 due: Ch. 11: 14-20 (even), 26, 28, 36. Quiz 6.
Th, Oct. 22	Chapters 14/15 Questions and Problems. Project due at 11:59 PM.
T, Oct. 27	Chapter 18 Questions and Problems. HW 7 due: Ch. 14: 11, 12, 15, 16, 17, 18, 24, 26; Ch. 15: 20, 21, 22, 23, 24, 30, 32, 41. Quiz 7.
Th, Oct. 29	Chapter. 18 Questions and Problems.
T, Nov. 3	Chapter. 19 Questions and Problems. HW 8 due: Ch. 18: 16, 19, 29, 30, 33. Quiz 8.
Th, Nov. 5	Chapter 19 Questions and Problems.
T, Nov. 10	EXAM II.
Th, Nov. 12	Chapter 20 Questions and Problems.
T, Nov. 17	Chapter 20 Questions and Problems.
Th, Nov. 19	Chapter 23 Questions and Problems.
T, Nov. 24	Chapter 25 Questions and Problems. HW 9 due: Ch. 19: 16, 17, 25, 26, 32, 33. Ch. 20: 32, 34, 38; Ch. 23: 30, 32(b), 38, 42. Quiz 9.
Th, Nov. 26	Chapter 25 Questions and Problems.
T, Dec. 1	Final Review. HW 10 due: Ch. 25: 15, 16, 28, 30, 37, 39. Quiz 10.
Th, Dec. 3	Final Review.
W, Dec. 9	FINAL EXAM: 1:00PM - 3:00PM Finally done ☺.