

The University of Iowa
College of Liberal Arts and Sciences
Department of Statistics and Actuarial Science

Statistics for Business (STAT:1030)

Spring 2023

3:30-4:45 PM Monday & Wednesday, Macbride Auditorium

<https://homepage.stat.uiowa.edu/~mbognar>

▷ **General Information**

- *Instructor*: Matt Bognar, 358 SH, 335-0799, matthew-bognar@uiowa.edu
- *Office Hours*: 10:00-11:30 Wednesday, 1:30-3:00 Thursday, and by appointment
- *TA's*: See website
- *DEO*: Prof. Kung-Sik Chan, 241 SH, 335-0712
- *Textbook*: There is *not* a required textbook for this course. Course notes, homework problems, statistical tables, etc. are available for free on ICON (under “Modules”)
- *Optional Textbook*: Moore, McCabe, Alwan, Craig (2016). *The Practice of Statistics for Business and Economics, 4th edition*, MacMillan.
- *ICON/Web*: This course will use ICON (<https://icon.uiowa.edu>) – our ICON page will be used for grades, accessing files, quiz/exam keys, etc. Our webpage will be used for announcements, homework assignments, etc. (<https://homepage.stat.uiowa.edu/~mbognar>).
- *Approved GE*: Quantitative or Formal Reasoning. This course is primarily for students following the business curriculum. Topics covered include descriptive statistics, probability, estimation, testing hypotheses, and regression and correlation. Students analyze data using the *R* computer package.

▷ **Course Objectives**

- In this course we will cover the following topics (in roughly this order):
 - * Statistical graphics, summary statistics, Chebyshev’s inequality
 - * Sampling techniques (simple random sampling), experimental design (treatment and control groups, randomization, blinding)
 - * Probability – addition and product rules, independence, conditional probability, Law of Total Probability, Bayes Theorem
 - * Probability distributions – expectation and variance; binomial, geometric, Poisson, and normal distributions
 - * Sampling distributions, Central Limit Theorem (CLT)
 - * Inference for μ (σ known, σ unknown)
 - * Inference for $\mu_1 - \mu_2$ ($\sigma_1 = \sigma_2$, $\sigma_1 \neq \sigma_2$)
 - * Inference for p (Wald and Agresti-Coull confidence intervals, Score test) and $p_1 - p_2$
 - * Type I & II errors, α , β , statistical power
 - * Chi-square test for independence, Chi-square goodness of fit test, relative risk, odds ratio, Simpson’s paradox
 - * Correlation and simple regression (including inference)
 - * Multiple regression (time permitting)
- Students learn how to assess statistical significance for all covered inferential procedures
- We will learn how to do many of the statistical analyses described in class using the statistical software package *R*. *R* is available in the campus computer labs, and *R* can be downloaded for free at <https://www.r-project.org>. Hand computation will be stressed, however.

▷ **Grading**

- **Exams (60% total):** There will be 2 midterm exams (17.5% each) and a final exam (25%). All exams will be 2 hours in length. Exam dates:
 - * **Exam 1:** Tuesday, February 21, 6:30-8:30 PM, in-person, Macbride Auditorium & W151 PBB
 - * **Exam 2:** Tuesday, April 4, 6:30-8:30 PM, in-person, Macbride Auditorium & W151 PBB
 - * **Final Exam:** TBAStudents are expected to take the exams at the *scheduled time*. It is your responsibility to make the appropriate arrangements *beforehand*.
 - * *It is your responsibility to bring a calculator, pencils, and statistical tables to the exams* – borrowing one of these items from your TA or Matt (should we have one available) will result in a 10 point (i.e. 10%) deduction for each item borrowed.
 - * If you must miss an exam, you must *directly* inform Matt *before* the exam begins. You will be required to provide full, detailed, irrefutable documentation.
 - * The exam key is released immediately after the exam. As such, *we do not allow makeup exams after the official exam time*.
- **Quizzes (20% total):** A quiz will be given each Thursday in discussion. The lowest 2 quiz scores will be dropped.
 - * *Make-up quizzes will not be allowed under any circumstances* (if you get COVID, use one of your drops; if you have a death in the family, use one of your drops, etc.).
 - * *It is your responsibility to bring a calculator, pencils, and statistical tables to the quizzes* – borrowing one of these items from your TA (should he/she have one available) will result in a 5 point (i.e. 25%) deduction for each item borrowed.
 - * If academic misconduct forces us to cancel the quizzes, extra weight will be placed on the exams.
- **Homework (10% total):** Homework will be due each Thursday in discussion. The lowest 2 homework scores will be dropped.
 - * *Late homework will not be accepted under any circumstances*.
 - * Homework will be submitted on paper (we may submit some homework online; Matt wants to keep this option open).
 - * You may not submit your homework via email (don't ask to do so, the answer will be "no").
 - * You will not succeed in this course without doing the homework. Do the homework on your own. Work independently.
 - * Staple and de-fuzz your homework.
 - * Messy homework will receive a reduction in score. Excessively messy homework will receive a score of 0.
- **Mini-Quizzes (5% total):** An unannounced mini-quiz will periodically be administered in lecture.
 - * *Make-up mini-quizzes will not be allowed under any circumstances*.
- **Discussion (5% total):** Your TA will take attendance in discussion. Your discussion grade will be based upon your attendance.

▷ **Grading Notes**

- Grade cutoffs will be no higher than the usual 90%, 80%, 70%, 60% breakdown.
- Do not expect a curve to pass you in this course. Learning the material and successfully demonstrating your knowledge is what allows you to pass the course.
- Final grade cutoffs are not released.
- This course uses the +/- grading system (i.e. grades such as A-, B+, and B will be assigned).
- Your attendance, participation, preparedness, work ethic, etc. may slightly affect your grade.
- Final averages are computed to 2 decimal places; as such, a final average of 79.99% will receive a C+.
- Bonus points may be given at any time and may be applied to any part of your grade.

- *Your final grade is based solely on your performance in this class.*
 - * Your final grade can not be negotiated. Emails requesting a higher grade will be ignored. Meeting with me will not earn you a higher grade.
 - * Scholarships, angry parents, academic standing, etc. are completely irrelevant to the grade you receive in this course.
 - * We do not have individual extra credit opportunities in this course.

▷ ***Extra Help***

- *Statistics Tutorial Lab:* There is a *free* statistics tutorial lab for students in this course. During available times, a graduate student will be present to assist you. Hours for the lab can be found at <https://www.stat.uiowa.edu/resources/tutoring>. A list of *non-free* private tutors can be found on this page as well.
- *Supplemental Instruction (SI):* This course has SI available. SI is an excellent peer facilitated, interactive group study session designed to not only help you learn the material, but also *how* to learn. <https://tutor.uiowa.edu/arc-academic-resource-center>

▷ ***Notes***

- The material in this course looks deceptively easy. It takes a significant time investment to excel. Far too many students put this course at the bottom of their priority list and receive a poor grade. Invest the time, be engaged.
- Expect to spend 10 to 15 hours per week studying the material in this course. Review/study numerous times throughout the week.
- Frequently quizzing/testing yourself is the best, most efficient way to learn the material.
- *Learn from your mistakes.*
- *Be an independent student.* Do not overly rely on tutors, TAs, office hours, etc. to learn the material. Over reliance is not the path to success.
- When using office hours, you must come *fully prepared* with *specific questions*. Matt or your TA will not walk through the entire homework with you (hand-holding is not helpful to students). We are eager to answer direct, specific questions that have been thoroughly pondered by students; this approach provides the maximum academic benefit.
- Do not miss class.
 - * If you miss lecture, Matt (or your TA) will not personally walk through the lecture with you.
 - * If you miss discussion, your TA will not provide handouts/notes or repeat what was covered.
 - * Lectures are not recorded. Lectures are not zoomed. Lecture and discussion notes are not available online.
 - * If you want the material, come to class.

▷ ***Academic Misconduct***

- During quizzes and exams, you may not talk, whisper, pass notes, view other students' work, allow a fellow student to view your own work (cover your paper), write-on (or read-from) the desktop, use class notes, etc. Also,
 1. *It is your responsibility to look honest.* Be careful where you glance during quizzes and exams.
 2. Cell phones may not be used under any circumstances.
 3. Calculators may not be shared.
 4. Statistical tables may not be shared.
- If you finish all homework problems in their entirety, you may then work with a fellow student to compare methods, answers etc. *Simply copying another student's homework will be considered academic misconduct.*
- All academic misconduct will receive the following sanctions:
 1. A report will be filed with the UI.

- 2. You will receive a 0 on the exam/quiz/homework on which the academic misconduct took place.
- 3. **Your final grade will be lowered by 2 full letter grades (e.g. from a B+ to a D+).**
- Students are encouraged to contact Matt (or your TA) about fellow students possibly engaging in academic misconduct. Your identity will remain totally anonymous.

▷ *The College of Liberal Arts and Sciences Policy and Procedures*

- Academic Honesty and Misconduct: All students in CLAS courses are expected to abide by the CLAS Code of Academic Honesty.
- Student Complaints: Students with a complaint about a grade or a related matter should first discuss the situation with the instructor, and finally with the Director or Chair of the school, department, or program offering the course. Undergraduate students should contact CLAS Undergraduate Programs for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS Associate Dean for Graduate Education and Outreach and Engagement when additional support is needed.
- Drop Deadline for this Course: You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the drop deadline for this course here. When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the Registrar’s website. Undergraduate students can find policies on dropping and withdrawing here. Graduate students should adhere to the academic deadlines and policies set by the Graduate College.

▷ *University Policies*

- Accommodations for Students with Disabilities
- Basic Needs and Support for Students
- Classroom Expectations
- Exam Make-up Owing to Absence
- Free Speech and Expression
- Mental Health
- Military Service Obligations
- Non-discrimination
- Religious Holy Days
- Sexual Harassment/Misconduct and Supportive Measures
- Sharing of Class Recordings