

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

Statistics for Business (STAT:1030)

Fall 2018

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. Joe Lang, 241 SH, 335-0712
- *Textbook*: There is *not* a required textbook for this course. Course notes, homework problems, statistical tables, etc. will be available for free on ICON.
- *Textbook (optional)*: Moore, McCabe, Alwan, Craig, and Duckworth (2011). *The Practice of Statistics for Business and Economics, 3rd edition*, Freeman.
- *ICON/Web*: This course will use ICON (<https://icon.uiowa.edu>). Our course website 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 Minitab computer package.

▷ **Course Objectives**

- In this course we will cover the following topics (in roughly this order):
 - * Statistical graphics, summary statistics
 - * Sampling techniques (SRS, stratified, cluster), experimental design (treatment and control groups, randomization, blinding)
 - * Probability (addition and product rules, conditional probability, Bayes theorem)
 - * Probability distributions (expectation, variance, binomial, Poisson)
 - * Normal distribution, 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 and $p_1 - p_2$
 - * Type I & II errors, statistical power
 - * Inference for two-way contingency tables, Simpson's paradox
 - * Correlation and simple regression (including inference)
 - * Multiple regression (time permitting)
- Students will learn how to assess significance for all 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>. We use Excel a little bit as well. 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, September 25, 6:30-8:30 PM

* *Exam 2:* Tuesday, October 30, 6:30-8:30 PM

* *Final Exam:* TBA

Students are expected to be present for the exams at the scheduled time. It is your responsibility to make the appropriate arrangements beforehand.

- *Quizzes (20% total):* A quiz will be given each Thursday in discussion. *Make-up quizzes will not be allowed under any circumstances.* The lowest two quiz scores will be dropped. Unannounced quizzes may be given (in lecture or discussion) at any time. *If academic misconduct becomes a problem during quizzes, the quizzes may be cancelled. The average of your subsequent exam score(s) will be used for the cancelled quiz scores. Students involved in academic misconduct may be required to change discussion sections. All academic misconduct will be reported to the UI.* Weekly quizzes are the best way to learn the material as-we-go; the cancellation of quizzes would certainly make succeeding in this course much more difficult.
- *Homework (10% total):* Homework will be due each Thursday in discussion. Because the TA's will *not* have enough time to grade each problem, a subset of the assigned problems will be graded. *Late homework will not be accepted under any circumstances.* The lowest two homework scores will be dropped. Homework must be stapled, defuzzed, be neatly written in pencil, and look professional (points will be deducted for failing to do so). Excessively sloppy homework will receive a score of 0.
- *Mini-Quizzes (5% total):* An unannounced mini-quiz will periodically be administered in lecture (and possibly discussion). *Make-up mini-quizzes will not be allowed under any circumstances.* The lowest mini-quiz score will be dropped.
- *Discussion (5% total):* In discussion, your TA will grade you via attendance, unannounced quizzes, preparedness, participation, etc. *Make sure you fully understand your TA's policies and expectations regarding the discussion grade. Grading guidelines will vary from TA to TA.*
- Your attendance, participation, preparedness, work ethic, etc. may affect your grade.
- This course uses the +/– grading system (i.e. grades such as A–, B+, and B will be assigned).
- Grade cutoffs will be no higher than the usual 90, 80, 70, 60 breakdown.
- Final averages are computed to 2 decimal places; as such, a final average of 79.98% will receive a C+.
- Bonus points may be given at any time and may be applied to any part of your grade.

▷ ***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.

▷ ***Notes***

- Do not miss class. You need to attend every day to succeed in this class.
- Success in this class requires a large time commitment. A *minimum* of 10 to 15 hours per week is expected. Review/study numerous times throughout the week.
- The material in this course appears *deceptively* easy. *Frequently quizzing/testing yourself is the best, most efficient way to learn the material.*
- If you are absent from discussion or lecture (without giving prior notice to your TA), we can not provide handouts/notes.

▷ ***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), use class notes, etc. Also,
 1. You may not discuss the quiz until Thursday evening (i.e. after all students have completed the quiz).

2. You must take the quiz during your regular discussion time; attempting to take a quiz during a different discussion time (without prior consent) is considered academic misconduct and will be reported to the UI.
- If you finish all homework problems in their entirety, you may then work with a fellow student to compare methods, answers etc. *Simply copying a 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. You will be placed on academic probation for 5 years, suspended, or expelled.
 2. You will receive a 0 on the exam/quiz/homework on which the academic misconduct took place.
 3. You will not be able to drop the lowest 2 quiz scores, the lowest 2 homework scores, and the lowest mini-quiz score.
 4. 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***

- *Administrative Home:* The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <https://clas.uiowa.edu/students/handbook>.
- *Electronic Communication:* University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11, <https://opsmanual.uiowa.edu/human-resources/professional-ethics-and-academic-responsibility#15.2>).
- *Accommodations for Disabilities:* UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student should then discuss accommodations with the course instructor (<https://sds.studentlife.uiowa.edu/>).
- *Academic Honesty:* All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty (<https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code>): "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook, <https://clas.uiowa.edu/students/handbook>).
- *CLAS Final Examination Policies:* The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.
- *Making a Suggestion or a Complaint:* Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook, <https://clas.uiowa.edu/students/handbook>).
- *Understanding Sexual Harassment:* Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a

responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator (<https://osmrc.uiowa.edu/>) for assistance, definitions, and the full University policy.

- *Reacting Safely to Severe Weather:* In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website (<https://police.uiowa.edu/emergency-communications>).
- *Nondiscrimination in the Classroom:* UI is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity at diversity@uiowa.edu or <https://diversity.uiowa.edu>.