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

Statistics for Business (STAT:1030)  
Fall 2019  
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”)
- 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 R 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, independence, conditional probability, Law of Total Probability, Bayes Theorem
  * Probability distributions – expectation and variance; binomial, Poisson, and normal distributions
  * Sampling distributions, Central Limit Theorem (CLT)
  * Inference for \( \mu \) (\( \sigma \) known, \( \sigma \) 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, 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. 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, October 1, 6:30-8:30 PM, Macbride Aud., W290 CB
* Exam 2: Tuesday, November 5, 6:30-8:30 PM, Macbride Aud., W290 CB
* 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. 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.

- **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. 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 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 may 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 follow the usual 90%, 80%, 70%, 60% breakdown. This class is not curved.
- 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](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), write-on (or read-from) the desktop, use class notes, etc. Also,

1. Calculators may not be shared.
2. Statistical tables may not be shared.
3. You may not discuss the quiz with anyone until Thursday evening (i.e. after all students have completed the quiz). Discussing the quiz before Thursday evening is considered academic misconduct and will be reported to the UI.
4. 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 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

- Absences and Attendance: Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing their course absence policies, which will vary by instructor. All absence policies, however, must uphold the UI policy related to student illness, mandatory religious obligations, including Holy Day obligations, unavoidable circumstances, or University authorized activities (https://clas.uiowa.edu/students/handbook/attendance-absences). Students may use this absence form to aid communication; the instructor will decide if the absence is excused or unexcused (https://clas.uiowa.edu/sites/default/files/ABSENCE%20EXPLANATION%20FORM2019.pdf).

- Academic Integrity: All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College’s Code of Academic Honesty. Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through the UI email address (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code).

- 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 is then responsible for discussing specific accommodations with the instructor. More information is at https://sds.studentlife.uiowa.edu/.

- Administrative Home of the Course: The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and related policies. Other colleges may have different policies. CLAS policies may be found here: https://clas.uiowa.edu/students/handbook.

- Communication and the Required Use of UI Email: Students are responsible for official correspondences sent to the UI email address (uiowa.edu) and must use this address for all communication within UI (Operations Manual, III.15.2).

- Complaints: Students with a complaint about an academic issue should first visit with the instructor or course supervisor and then with the Chair of the department or program offering the course; students may next bring the issue to the College of Liberal Arts and Sciences. For more information, see https://clas.uiowa.edu/students/handbook/student-rights-responsibilities.
Final Examination Policies: The final exam schedule is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this information. No exams of any kind are allowed the week before finals. Visit https://registrar.uiowa.edu/final-examination-scheduling-policies.

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 (https://diversity.uiowa.edu).

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 must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, please see https://osmrc.uiowa.edu/.