

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

Biostatistics (STAT:3510) - Fall 2018

Lecture A: 8:30-9:20 am Monday, Wednesday, & Friday, 100 PH
Lecture B: 2:30-3:20 pm Monday, Wednesday, & Friday, 1505 SC

▷ **General Information**

- *Instructor*: Michelle Larson, 221 SH, 335-0814, michelle-larson@uiowa.edu
Office Hours: 9:30 - 11:00am Mondays, 3:30-4:20pm Mondays, and by appointment
- *TAs*: Lecture A - Steve Manning, 267 SH, steven-manning@uiowa.edu
Office Hours: 12:00 - 1:50pm Tues, 1:00 - 1:50pm Thurs, and by appointment
Lecture B - Bill Chew, 348 SH, william-chew@uiowa.edu
Office Hours: 3:00 - 4:50pm Tues, 6:00 - 6:30pm Tues & Thurs, and by appointment
- *DEO*: Joseph Lang, 241 SH, 335-0712
- *Calculator*: Students are strongly encouraged to use a calculator capable of performing statistical computations. In-class support will be given for students using a TI-83 or TI-84; limited help from the instructor is available for other models (e.g. TI-89, Casio models). Students will not be allowed to use calculators on their laptop, tablet, watch, or other electronic devices during exams.
- *Reference Textbook*: NONE - Course is taught from instructor notes posted on ICON; additional resources also provided on ICON; see instructor if you require textbook recommendations or further resources
- *ICON/Web*: This course will use ICON powered by Canvas (<http://icon.uiowa.edu>) for announcements, quizzes, homework assignments, etc. Students are expected to check ICON regularly.

▷ **Course Objectives**

- In this course we will cover the following topics (in roughly this order):
 - * Summary statistics, Statistical graphics
 - * Probability (addition and product rules, conditional probability, Bayes theorem)
 - * Random Variables and Probability Distributions (expectation, variance, Binomial, Poisson)
 - * Normal distribution, Sampling distributions, Central Limit Theorem (CLT)
 - * Sampling techniques (SRS, stratified, cluster)
 - * Experimental design (treatment and control groups, randomization, blinding)
 - * Inference for single proportions, p and two-sample proportions, $p_1 - p_2$
 - * Inference for means μ (σ unknown)
 - * Inference for difference in means, $\mu_1 - \mu_2$ ($\sigma_1 \neq \sigma_2$)
 - * Type I & II errors; statistical power
 - * Correlation and simple regression (including inference)
 - * Inference for two-way contingency tables (Chi-square tests)
 - * Nonparametric Tests (time permitting)
 - * ANOVA (time permitting)
 - * Multiple regression (time permitting)
- Students will learn how to assess significance for all inferential procedures.
- Students are encouraged to use technology to perform statistical analyses described in class, however, explicit work (formulas, computations, etc.) is required to be shown.

▷ **Grading**

- *Exams*: There will be 2 midterm exams (22.5% each) and a comprehensive final exam (35%). Midterms will be given during regular class time. Exam dates:
 - * Exam 1: Wednesday, September 26, 2018
 - * Exam 2: Wednesday, October 31, 2018
 - * Final Exam: TBA

Students are expected to be present for the exams at the *scheduled time*. If you have a legitimate, unavoidable conflict, it is your responsibility to make the appropriate arrangements at least 24 hours in advance. If you miss an exam due to a sudden absence, email the instructor immediately. Note that during exams, students will be asked to place belongings, including electronic devices other than stand-alone calculators, at the front of the room.

- *Homework*: (10% total) Homework will be due each Wednesday *at the beginning* of lecture. Because the grader will *not* have enough time to grade each problem, a subset of the assigned problems will be graded. *Homework turned in late (including at the end of class) or illegible will be given a score of zero*. The lowest homework score will be dropped. Students are encouraged to work together on homework but work submitted must be your own. Homework must be stapled, defuzzed, be neatly written; solutions must appear in the order assigned. Be sure your name, discussion section or time, and the assignment number appear at the top of the first page.
- *Online Quizzes*: (5% total) An online (ICON/Canvas) quiz will be given following each lecture. Students will have until the beginning of the next lecture to complete the quiz. *Make-up quizzes will not be allowed under any circumstances*. The lowest four quiz scores will be dropped.
- *Project*: (5% total) Students will complete an individual project due 5pm, Friday, October 19, 2018. The project will be submitted on paper and via Canvas. Detailed information will be given in class.
- *Discussion*: (0% total) Students are expected to attend and participate in scheduled discussions. Material will be covered in discussion that will not be provided in lecture.
- Your attendance, participation, preparedness, work ethic, etc. may affect your final grade.
- This course uses the +/– grading system (i.e. grades such as A–, B+, and B will be assigned). I do NOT anticipate a curve.
- Grade cutoffs will be no higher than the usual 90 (A–), 80 (B–), 70 (C–), 60 (D–) breakdown.
- Bonus points may be given at any time and may be applied to any part of your grade.

▷ **Extra Help**

- Students are encouraged to seek help from their TA or any other TA for this class, the instructor, and/or peers. A list of *non-free* private tutors can be found at <http://www.stat.uiowa.edu/resources/tutoring>. While not specific to our class, graduate students in the Statistics Tutorial Lab may also be able to assist you. Hours for the lab can be found on this same web page.

▷ **Notes**

- Do not miss class. You need to attend every day to succeed in this class.
- Please refrain from eating, using your phone, wearing earbuds, and using other electronic devices during 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. Students are encouraged to work lots of practice problems. *Frequently quizzing/testing yourself is the best, most efficient way to learn the material*. Don't memorize; try to *understand*.
- If you are absent from discussion or lecture (without giving prior notice to your TA), we can not provide handouts/notes.
- When you are done reading this document, and before the final exam begins, email me a picture of a kite for 5 bonus quiz points.

▷ *Academic Misconduct*

- During 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. All such actions are considered academic misconduct and will be reported to the UI.
- You may, however, work with a fellow student on your homework provided you *both do all of the problems in their entirety* (at which point you can compare methods, approaches, and answers). *Simply copying a another student's homework will be considered academic misconduct.*

▷ *The College of Liberal Arts, Teaching Policies & Resources*

- *Administrative Home:* 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 other policies. These policies vary by college (<http://clas.uiowa.edu/students/handbook>).
- *Electronic Communication:* Students are responsible for official correspondences sent to their UI email address (uiowa.edu) and must use this address for all communication within UI (Operations Manual, III.15.2, k.11, <http://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 (<http://sds.studentlife.uiowa.edu/>).
- *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/office/equal-opportunity-and-diversity>.
- *Academic Integrity:* All undergraduates enrolled in courses 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>). Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through the UI email address.
- *CLAS Final Examination Policies:* The final exam schedule for each semester 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 final exam information. **No exams of any kind are allowed the week before finals.** (<https://clas.uiowa.edu/faculty/teaching-policies-resources-examination-policies>)
- *Making a Complaint:* Students with a complaint should first visit with the instructor or course supervisor and then with the departmental executive officer (DEO), also known as the Chair. Students may then bring the concern to CLAS (<https://clas.uiowa.edu/students/handbook/student-rights-responsibilities>).
- *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 must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, definitions, and the full University policy, see <http://osmrc.uiowa.edu/>.