

Department of Statistics and Actuarial Science
Probability & Statistics for Engineers (STAT:2020)

Spring 2018

STAT:2020:0AAA, 12:30-1:20 PM, MWF, C20 PC

STAT:2020:0BBB, 3:30-4:20 PM, MWF, W290 CB

<http://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
- *DEO*: Joe Lang, 241 SH, 335-0712
- *Textbook*: Montgomery and Runger (2014). *Applied Statistics and Probability for Engineers (6th edition)*, Wiley.
- *ICON/Web*: This course will use ICON (<http://icon.uiowa.edu>) for grades and our course website (<http://homepage.stat.uiowa.edu/~mbognar>) for announcements, homework assignments, etc.

▷ **Course Objectives**

- In this course we will cover the following topics (in roughly this order):
 - * Counting techniques, probability, conditional probability, Bayes Theorem
 - * Random variables, expectation, variance
 - * Uniform, Bernoulli, binomial, geometric, hypergeometric, negative binomial, Poisson, normal, and t distributions
 - * Joint, marginal, and conditional distributions (including rectangular and non-rectangular supports); independence, conditional expectation
 - * Transformations for discrete and continuous random variables (one-to-one and many-to-one)
 - * Sampling distributions, Central Limit Theorem
 - * Data collection, summary statistics, graphical displays
 - * Confidence intervals and hypothesis testing (one and two sample inference for means and proportions); assessing statistical significance
 - * Correlation and simple regression
- We will learn how to do some of the statistical analyses described in class using the statistical software package *R*. *R* is available in the campus computer labs; it is also available for free at <http://www.r-project.org>. Hand computation will be stressed, however.
- We will *not* cover all parts of each chapter listed above. Focus your readings on the material that was covered in class. Supplementation to the textbook, when needed, will be provided.

▷ **Grading**

- *Exams*: There will be 2 midterms (17.5% each) and a final exam (25%). Exam dates:
 - * Exam 1: Friday, February 16 (in class)
 - * Exam 2: Friday, March 30 (in class)
 - * 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*: (25% total) A quiz will be given in lecture each Friday. *Make-up quizzes will not be allowed under any circumstances*. The lowest two quiz scores will be dropped. Unannounced quizzes may be given at any time.

- *Homework:* (10% total) Homework will be due each Friday. A subset of the assigned problems will likely 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. Print your name and discussion section in the upper right corner of your homework before handing-in.
- *Discussion:* (5% total) Your TA will evaluate you via attendance, unannounced quizzes, preparedness, participation, etc. in your discussion sections. *Make sure you are clear about your TA's policies and expectations regarding the discussion grade.*
- 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).
- Grades cutoffs will be no higher than the usual 90, 80, 70, 60 breakdown.
- Bonus points may be given at any time. The bonus points may be applied to any part of your grade.
- *Statistics Tutorial Lab:* More information can be found at

<http://www.stat.uiowa.edu/resources/tutoring>

A list of private tutors can also be found here.

▷ *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), communicate with a fellow student in any way, use a cell phone, use class notes, etc.
- **You may not discuss the quiz with anyone until Friday evening at 5:00 PM.**
- **You may not discuss the exam with anyone until Friday evening at 5:00 PM.**
- 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:
 - * A report will be filed with the UI. You will be placed on academic probation, suspended, or expelled.
 - * You will receive a 0 on the exam/quiz/homework on which the academic misconduct took place.
 - * **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 <http://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, <http://opsmanual.uiowa.edu/human-resources/professional-ethics-and-academic-responsibility#15.2>).
- *Accommodations for Disabilities:* The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services (SDS) and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See <http://sds.studentlife.uiowa.edu> for information.

- *Academic Honesty*: All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College’s Code of Academic Honesty (<http://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, <http://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, <http://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 (<http://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 (<http://police.uiowa.edu/emergency-communications>).
- *Nondiscrimination in the Classroom*: The University of Iowa 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, diversity@uiowa.edu, or visit <http://diversity.uiowa.edu>.