

**STAT:1020:0100/PSQF:1020:0100**  
**Elementary Statistics and Inference**  
**Spring 2018 - evening class**

**Instructor:** M. Russo, 269 SH, 353-2295, mary-russo@uiowa.edu

**Class Time/Location: Eve Class (Sec 0100)** Wed., 5:30 PM - 8:30 PM, 40 SH

**Office Hours:** Tues. 10:30 AM - 12:30 PM, Wed. 2:30 PM – 3:20 PM, and by appointment. Occasionally, hours may be rescheduled to accommodate students who wish to attend -- announcements of changes will be made in class and posted on the instructor's door (269 SH). Students seeking office-hour help are expected to have excellent attendance in the lectures and discussions.

**Communication:** Students should use only their University of Iowa email address, when corresponding with me via email.

**Approved GE:** Quantitative or Formal Reasoning. Courses approved in this area have as their primary purpose the development of the analytical powers of the student as they might be exercised in the presentation and evaluation of mathematical or other formal symbolic systems.

**Course Objectives:** This course introduces the major ideas of probability and statistics. Topics include descriptive statistics, the normal distribution, correlation and regression, elements of probability, chance error, expectation, standard error, sampling, logic of statistical inference, confidence intervals & hypothesis tests.

**Prerequisite:** MATH:0100 or MATH:1005 or equivalent. Students should be comfortable with math at the level of elementary algebra (e.g., points on a graph, the equation of a straight line, powers & roots, percentages).

**Text:** Intro Stats, 4th edition by De Veaux, Velleman, and Bock; Pearson Education, Inc., **4th ed.** (ISBN: 13: 978-0-321-82527-8). This is an excellent book with many good examples & exercises. Online access to MY STAT LAB is required for the course. The e-text is included with MY STAT LAB.

Students may choose to purchase a print copy of the text **with** online access, OR students may choose to purchase only online access and use the (included) e-text.

**Additional course materials** will be posted in CANVAS content. Students are required to print out these materials & bring them to class and discussions, as needed.

**The Lectures:** Topics from the text will be covered. Some additional material will be covered. Notation, theory, problems, and procedures will be explained in detail. Notes should be taken. Bring your printed course materials from CANVAS, and a calculator. Note that restrictions concerning calculators will be announced.

**Attendance** is required. A record of attendance will be made. Illness/injury is a legitimate reason to miss class; feeling a little under the weather is not. Note that **a missed class is equivalent to a missed week** and absences usually lead to lower scores on quizzes and exams.

**The classroom environment:** Students have the right to a classroom environment that encourages learning. **Arriving late or leaving early or conversing with fellow students during the lecture is discourteous and distracting to the instructor and to fellow students.** The learning environment is diminished when students engage in inappropriate classroom behavior such as reading newspapers or other non-class material, working on homework, using a cell phone, and using personal computers for non-class purposes such as web-surfing and facebook. More information concerning student rights and responsibilities in the classroom can be found at <http://clas.uiowa.edu/students/handbook>

**Homework** assignments will consist of **online problems**. Occasionally, **supplemental problems** might be assigned.

**The online problems** and due dates will be posted on MY STAT LAB. These problems must be completed and submitted using MY STAT LAB.

**Supplemental assignments** and due dates will be posted on CANVAS. These assignments will be collected **at the beginning of class**, on the due date.

For each **supplemental problem**, show the necessary work and clearly indicate your answer. Include enough detail to demonstrate your method for finding the answer. Sketches and graphs are helpful. Please use a dark pencil (#2) or a black or blue pen.

**Supplemental problems** MUST BE **completed** directly on the pages printed from CANVAS.

Each **supplemental assignment** MUST include your **name as it appears on CANVAS**, date, and section number, printed in **INK**, in the top right hand corner. In addition, you may include your preferred name or nickname in parentheses. Please DO NOT write your student ID number on your homework papers.

**Working Together on Homework:** You are encouraged to study, discuss, and work on homework problems with others. However, you are required to complete and submit the online homework ON YOUR OWN. And, you are required to write the solutions to supplemental problems ON YOUR OWN, rather than copying the work of others.

**Late Homework: Online homework** must be submitted on time, for full credit. The points earned for online problems submitted late, but not more than 24 hours late, will be subject to a 50% reduction. Online homework submitted more than 24 hours late will not be accepted.

**Supplemental homework** is officially due at **the beginning** of class on the due date. Supplemental homework submitted after that time, but prior to 3 PM of the Friday following the due date, is subject to a 50% penalty. Supplemental homework submitted after that time, but prior to 3 PM of the Monday following the due date, is subject to a 75% penalty. All other submissions are subject to a 100% penalty.

If you are unable to make it to class on a supplemental homework due date, you should arrange to have your homework delivered on time (that is, by the beginning

of the class on the due date). Please note that supplemental homework will NOT be accepted electronically.

**Online Quizzes** (approximately 4), given online. **The online quizzes** and due dates will be posted on MY STAT LAB. These quizzes must be completed and submitted using MY STAT LAB.

**In-Class Quizzes** (approximately 4), lasting about 15 minutes each, will be given during the class. In-class quiz dates and topics will be announced in class, the week before. In-class quizzes are "closed book" and consist of several "show your work" type problems. For each student, the lowest in-class quiz score will be dropped.

**Exams** will be "closed book" and multiple choice (or a combination of "show your work" and multiple choice.) For some of the exams, a small note sheet may be used. Details concerning note sheets and other exam policies, will be announced in class, one week before an exam.

The exams will cover material from the lectures, textbook, homework, and handouts.

**Exam #1**      Wednesday, February 21, (during class)  
**Exam #2**      Wednesday, April 4, (during class)

**Cumulative Final Exam** DATE/TIME/ROOM(S) to be announced

The final exam will be held during finals week, as scheduled by the university. My UI and the Registrar's webpage have links to the final exam schedule:

<http://www.registrar.uiowa.edu/default.aspx>

Any changes in the exam schedule will be announced in class and/or by email.

**Exam Protocol:** About one week before an upcoming exam, a memo containing information about the exam will be posted on CANVAS or given out in class. TA review sessions will be held. Attendance at the review sessions is optional.

Single-purpose calculators only (no smart devices) are to be used during quizzes and exams. Restrictions on calculators will be announced. Sharing calculators is NOT allowed. Students may not communicate with other students during the exams. If you leave an exam early, you risk missing a clarification, hint, or correction.

When you leave an exam, your question paper, stat tables, scrap paper (which will be given with the exam), note sheet (if allowed), and bubble sheet (if given with the exam), MUST be handed directly to the instructor or proctor. Then, your University of Iowa ID card must be presented. You must wait for an "OK" before leaving.

Cheating in all forms is taken very seriously. Cheating could result in the assignment of an "F" grade and disciplinary action by the college and/or university.

**Absences and Make-ups:** If you know that you will miss a quiz or exam, or if something unexpected comes up (emergency, illness, etc.) please let me (instructor) know as soon as possible prior to the exam, and we will discuss your situation and possibly schedule a make-up. Please be prepared to show documentation of your situation. Not all situations are university approved. Additional information

concerning the policy on missed exams and class work can be found at <http://clas.uiowa.edu/students/handbook>

**Grading:** The course grade will be calculated using the following weights:  
attendance = 2%, HW = 8%, online quizzes = 5%, in-class quizzes = 10%,  
exam 1 = 25%, exam 2 = 25%, final = 25%

The final course percent is a weighted sum of attendance, HW, quiz, midterm, and final exam grades:

**Course %** = (attendance fraction)(2%) + (Homework fraction)(8%) +  
(online quiz frac)(5%) + (in-class quiz frac)(10%) + (E1 frac)(25%) +  
(E2 frac)(25%) + (final frac)(25%)

As a rough guide, 90-100%=A- to A+, 80-90%=B- to B+, 65-80%=C- to C+,  
50-65% = D- to D+

Throughout the semester, grades will be recorded on CANVAS. If you feel that a grade you have received on a paper or on CANVAS is incorrect, and you wish to have your paper reviewed, you must contact the instructor and resubmit the paper **within 8 days** of the first day that the relevant paper was made available in class or the relevant grade was posted on CANVAS.

**Help** is available during instructor office hours and TA review sessions. The Statistics Tutorial Lab is open to all students enrolled in the class; the Lab will post open hours for drop-in sessions. Students sometimes hire independent tutors. A list of tutoring resources is kept on the Statistics Dept. homepage:  
<http://www.stat.uiowa.edu/resources/tutoring>

Note that for qualified students, tutoring may be available through The Center for Diversity and Enrichment: <http://diversity.uiowa.edu/cde>

**Information for students with disabilities:** I would like to hear from anyone who has a disability which may require seating modifications or testing accommodations or accommodations of other class requirements, so that appropriate arrangements may be made. Please contact me during my office hours or by email.

**Departmental Home:** The Department of Statistics and Actuarial Science is the departmental home of this course. The department office is in 241 SH, phone 335-0712, web address: <http://www.stat.uiowa.edu/>  
The Department Executive Officer (DEO) is Professor Lang, 241 SH, phone 335-0712, [joseph-lang@uiowa.edu](mailto:joseph-lang@uiowa.edu)

## **STAT:1020:0100 – Planned order of chapters and topics (Spring 2018):**

**January 17 – February 14:**

Chapter 1: data and variables

Chapter 2: displaying and describing a single categorical variable; exploring the relationship between 2 categorical variables

Chapter 3: displaying and summarizing quantitative data; displaying variables; shape; center; spread; boxplots and 5-number summaries; the mean; the standard deviation

Chapter 4: understanding and comparing distributions; using histograms; using boxplots; outliers; timeplots

Chapter 5: the standard deviation and the normal model; z-scores; shifting and scaling; normal models; normal percentiles; normal probability plots

Chapter 6: scatterplots; association; correlation; correlation vs. causation

Chapter 7: linear regression; the line of best fit; the linear model; finding the least squares line; regression to the mean; estimating residuals;  $R^2$  – the variation accounted for by the model; regression assumptions and conditions

Chapter 8: understanding regression issues

**February 21 – Exam 1** – Exam 1 covers the material in chapters 1, 2, 3, 4, 5, 6, 7, 8, and the related lectures, discussions, worksheets, and problem sets.

**February 21 – March 28:**

Chapter 9: randomness; simulation

Chapter 12: random phenomena; modeling probability; formal probability

Chapter 13: the General Addition Rule; conditional probability; the General Multiplication Rule; independence; tables, Venn diagrams, trees; reversing the conditioning; Bayes' Rule

Chapter 14: random variables and probability models; expected value; standard deviation; combining random variables; the binomial model; modeling the binomial with a normal model; continuous random variables

**April 4 – Exam 2** – Exam 2 emphasizes the material in Chapters 9, 12, 13, 14, and the related lectures worksheets, and problems sets. However, students are also responsible for the material covered by exam 1.

**April 4 – May 2:**

Chapter 15: sampling distribution models; sampling distribution of a proportion; using the normal model; the sampling distribution of other statistics; The Central Limit Theorem

Chapter 16: confidence intervals for proportions; interpreting a confidence interval; margin of error; assumptions and conditions

Chapter 17: Testing hypotheses about proportions; hypotheses; P-values; the logic of hypothesis testing; decisions

Chapter 18: inferences about the mean; the t-curve; confidence intervals for means; testing hypotheses about the mean; choosing a sample size

Chapter 19: understanding confidence intervals and hypothesis tests

**Select topics** from Chapter 20 and/or Chapter 22:

Chapter 20: comparing groups; the 2-sample z-test for the difference between proportions; the 2-sample t-test for the difference between two means

Chapter 22: comparing counts; Chi-Square goodness-of-fit test

**Exam Week – Final Exam** – The final exam is comprehensive and includes material covered throughout the course. However, about ½ of the exam emphasizes the material covered after exam 2 (Chapters 15, 16, 17, 18, 19 and select topics from C20 & C22) and about ½ of the exam emphasizes the earlier material.

## Teaching Policies & Resources — Syllabus Insert

### 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).

### 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 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 <https://sds.studentlife.uiowa.edu/> for information.

### **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](mailto:diversity@uiowa.edu), or visit [diversity.uiowa.edu](http://diversity.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](#): "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](#)).

### **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](#)).

### **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](#) 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](#).