1 General Information

Instructor: Rhonda DeCook
211 Schaeffer Hall, 335-3249
rhonda-decook@uiowa.edu

Instructor Office Hours: Monday 9:45-11:15am (in-person, 211 SH)
(or by appointment) Wednesday 9:45-11:15am (in-person, 211 SH)
Thursday 1-2pm (via Zoom)

Required Text is provided through ICON direct (e-text):
by Douglas C. Montgomery and George C. Runger.

A charge will be added to your U-Bill for this e-text, and note that the opt-out
period ends after the first couple weeks of the semester (see ICON for opt out specifics).

Time and Location: Lecture AAA: MWF 8:30-9:20 LR2 Van Allen Hall
Lecture BBB: MWF 2:30-3:20 LR2 Van Allen Hall

Teaching Assistants: See ICON website for TA names and Office Hours.
ICON Course Website: Our ICON website will be used to provide course materials such
as HW assignments, HW solutions, practice exams, and grades.

Course Goals and Objectives: In this course we will develop probabilistic reasoning
and statistical solutions for problems encountered in engineering and the physical sciences.

Tutorial Lab Extra Help: Extra help beyond office hours is freely available at the Statistics
Tutorial Lab at the Library Commons-Group Area E. See http://stat.uiowa.edu/resources/tutoring
for links.

R Software: Available for free at the R website.
Go to [https://cran.r-project.org]

Final Exam: Date and time to be determined.
Midterm ‘Evening’ Exams: Thursday, September 23, 6:30-8pm, LR2 VAN (exam 1)
Thursday, November 4, 6:30-8pm, C20 PC (exam 2)

Department: Statistics and Actuarial Science, CLAS
DEO: Dr. Kung-Sik Chan, 241 Schaeffer Hall
319-335-0712
2 Topics Covered

The collection, analysis, and display of information are discussed. Probability theory and statistics teach us how to characterize and model variability in processes and measurements. Probability theory, random variables, important discrete and continuous distributions, estimation of parameters and testing of hypotheses using sample data will be discussed. Regression methods will also be introduced. The programming language R for statistical computing will be introduced and used.

3 Tentative Class Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Sample Spaces and Event</td>
<td>1 &amp; 2</td>
</tr>
<tr>
<td>2</td>
<td>Probability Rules, Counting Techniques, Conditional Probability</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Independence, Random Variables, Discrete Random Variables</td>
<td>2 &amp; 3</td>
</tr>
<tr>
<td>4</td>
<td>Common Discrete Distributions</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Continuous Random Variables</td>
<td>4</td>
</tr>
</tbody>
</table>

Exam 1: Thursday, Sept. 23, 6:30-8pm

6 More on Continuous Random Variables
7 Joint Distributions
8 Correlation, Bivariate Normal, Numerical Summaries
9 Central Limit Theorem, Point Estimators
10 Confidence Intervals for $\mu$ and proportion $p$, $t$-distribution
11 Hypothesis testing for $\mu$ and $p$

Exam 2: Thursday, Nov. 4, 6:30-8pm

12 Inference for $\mu_1 - \mu_2$
13 Simple Linear Regression (SLR), Least-Squares Estimators

–Thanksgiving Break–

14 Hypothesis test in SLR, Correlation, Checking Assumptions
15 Multiple Linear Regression (if time permits)
16 Final Exam: Date and Time TBD

Tentative days of no class:
Nov. 22-26, Thanksgiving Break

4 Lectures/Readings/Quizzes/Discussions

Students should read material prior to lecture. We will not cover all sections of each chapter, so please focus your readings on the material that was covered in class. In the case of an absence, students are responsible for the material covered and must get the notes from a fellow student.

Quizzes will be given during lecture. Quiz make-ups will not be given, but you will be able to drop your lowest quiz score (use this wisely).

Similarities and Differences in AAA and BBB Lectures:

Lectures will essentially be the same. But YOU MUST ATTEND YOUR OWN LECTURE FOR QUIZZES (zero quiz points will be given if attending the wrong lecture).

Attendance at discussion is important. The extra problems covered in discussion class are useful for better understanding the material. Discussion also provides an opportunity to ask questions in a small class setting.
Assessment in this course will be based on the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Scheduled Quizzes*</td>
<td>15%</td>
</tr>
<tr>
<td>Unscheduled Quizzes*</td>
<td>6%</td>
</tr>
<tr>
<td>R Projects</td>
<td>6%</td>
</tr>
<tr>
<td>Discussion</td>
<td>3%</td>
</tr>
<tr>
<td>Exams*</td>
<td>60%</td>
</tr>
</tbody>
</table>

*No make-up exams or quizzes will be given unless there is an absence due to unavoidable circumstances as stated by University policy (documentation will be required in such a case).

BE SMART: Save your ‘drop the lowest score’ option for WHEN YOU REALLY NEED IT!! Your car breaks down, you’re too tired to get out of bed, any unexcused absence (i.e. the kinds of absences that seem to be a legitimate absence due to daily life conflicts).

Approximate Grading Guide:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>Below 60</td>
</tr>
</tbody>
</table>

Plus and minus grades will be given as deemed appropriate.

Policy on Student Collaboration:
It can be very beneficial to your learning process to work with others while learning a new topic. This is appropriate for homework and take-home projects, but all students must turn-in their own work in their own handwriting. All quizzes and exams are expected to be solo endeavors.

Calculator:
There are many calculators that are appropriate for this class. Your calculator should be able to calculate one-variable and two-variable statistics (i.e. mean, variance, correlation, etc.). Whichever calculator you choose, just make sure you are familiar with your own calculator.
Resources for Additional Help:

- **TA and Professor Office Hours**: Our office hours are a great resource for students. Please take advantage of them.

- **Statistics Tutorial Lab**: There is a free statistics tutorial lab. During available times, a knowledgeable person will be present to assist students. Information on the lab can be found at

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

- **Private For-Pay Tutors**: The Department of Statistics and Actuarial Science maintains a list of private tutors at

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

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**Attendance and Classroom Expectations:**
Students are responsible for attending class and for contributing to the learning environment of a course. This course does not have a specific component of the final grade based on attendance, but consistent attendance in lectures and discussion is strongly encouraged. Students are expected to comply with University policies and directives regarding appropriate classroom behavior or other matters. Students also have the right to be evaluated solely on their academic achievement and the fulfillment of related requirements.

**Absences:**
Students are responsible for communicating with instructors as soon they know that an absence might occur or as soon as possible in the case of an illness. Students may use the CLAS absence form to aid in communication with instructors who will decide if the absence is excused or unexcused; the form is located on ICON within the top banner under ‘Student Tools.’ Delays in communication could result in a forfeit of what otherwise might be an excused absence. As the syllabus above states, there are no make-ups for missed quizzes, but you may throw-out your lowest quiz score during the semester.

**Absences - Illness, Unavoidable Circumstances, and University Sponsored Activities:**
Students who are ill, in an unavoidable circumstance affecting academic work, or who miss class because of a University sponsored activity are allowed by UI policy to make up a missed exam. Documentation is required by the instructor except in the case of a brief illness. Students are responsible for communicating with instructors as soon as the absence is known.

**Absences - Holy Days:**
Reasonable accommodations are allowed for students whose religious holy days coincide with their classroom assignments, tests, and attendance if the student notifies the instructor in writing of any such religious Holy Day conflicts within the first days of the semester and no later than the third week. (See the University Operations Manual: [https://opsmanual.uiowa.edu/students/absences-class](https://opsmanual.uiowa.edu/students/absences-class)).

**Absences - Military Service Obligations:** Students absent from class due to U.S. veteran or U.S. military service obligations (including military service-related medical appointments, military orders, and National Guard Service obligations) must be excused without penalty. Instructors must make reasonable accommodations to allow students to make-up exams or other work. Students must communicate with their instructors about the expected possibility of missing class as soon as possible. (For more information, see [https://opsmanual.uiowa.edu/students/absences-class](https://opsmanual.uiowa.edu/students/absences-class)).
**Academic Integrity:**

All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College’s Code of Academic Honesty. Academic misconduct affects a student’s grade and is reported to the College which applies an additional sanction, such as suspension. Outcomes about misconduct are communicated through UI email (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code).

**Accommodations for Students with Disabilities:**

UI is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as a mental health, attention, learning, vision, and a physical or health-related condition) through the Student Disability Services (SDS) office. The student is responsible for discussing specific accommodations with the instructor. Note that accommodations are not granted retroactively but from the time of the student’s request to the instructor onward; additionally, accommodations must be requested at least two weeks in advance of the related assignment or exam (https://sds.studentlife.uiowa.edu/).

**Class Recordings - Privacy and Sharing:**

Course lectures and discussions are sometimes recorded or live-streamed. These are only available to students registered for the course and the intellectual property of the faculty member. These materials may not be shared or reproduced without the explicit written consent of the instructors. Students may not share these recordings with those who are not enrolled in the course; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and could be a violation of the Federal Education Rights and Privacy Act (FERPA); also see https://dos.uiowa.edu/policies/code-of-student-life/.

**Communication and the Required Use of UI Email:**

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community (Operations Manual, III.15.2). Emails should be respectful and brief, with complex matters addressed during the instructor’s drop-in hours, for example. Faculty are not expected to answer email after business hours or during the weekends.

**Communication and Free Expression:**

The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principle of academic freedom to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech if student expression in a class context is germane to the subject matter of the class and is conveyed in an appropriate manner. To learn more, visit https://freespeech.uiowa.edu/.

**Complaints about Academic Matters:**

Students with a complaint about a grade or a related academic matter should first visit with the instructor and then with the course supervisor if one is assigned, and finally with the Chair of the department or program offering the course. Students may next bring the issue if not resolved to the College of Liberal Arts and Sciences. See https://clas.uiowa.edu/students/handbook/student-rights-responsibilities.

**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 other policies. Different UI colleges may have other policies or deadlines. See https://clas.uiowa.edu/students/handbook Questions? Contact CLAS at clasps@uiowa.edu or 319-335-2633.
Final Examination Policies:
The final exam schedule is published during the fifth week of the fall and spring semesters or on the first day of summer classes; students are responsible for knowing the date, time, and place of their final exams. Students should not make travel plans until knowing this information. A student with exams scheduled on the same day and time or who have more than two final exams on the same day should visit this page for how to resolve these problems by the given deadline: [https://registrar.uiowa.edu/makeup-final-examination-policies](https://registrar.uiowa.edu/makeup-final-examination-policies).

No exams are allowed the week before finals, but with some exceptions made for labs, language courses, and off-cycle courses ([https://registrar.uiowa.edu/final-examination-scheduling-policies](https://registrar.uiowa.edu/final-examination-scheduling-policies)).

Mental Health:
Students are encouraged to seek help as a preventive measure or if feeling stressed or overwhelmed. Students should talk to their instructors for guidance with specific class-related concerns and are encouraged to contact University Counseling Service (UCS) at 319-335-7294 during regular business hours to schedule an appointment. USC offers group and individual therapy as well as counseling for couples about relationships while making referrals to other resources ([https://counseling.uiowa.edu/](https://counseling.uiowa.edu/)). Student Health can also address related concerns ([https://studenthealth.uiowa.edu/](https://studenthealth.uiowa.edu/)). These visits are free to students. After hours, students are encouraged to call the Johnson County Community Crisis Line at (319) 351-0140 or dial 911 in an emergency.

Nondiscrimination in the Classroom:
The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals based on race, class, gender, sexual orientation, national origin, and other identity categories indicated by the University’s Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity at [https://diversity.uiowa.edu/division/office-equal-opportunity-and-diversity-eod](https://diversity.uiowa.edu/division/office-equal-opportunity-and-diversity-eod).

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 are expected to conduct themselves in a manner that maintains an environment free from sexual harassment and sexual misconduct. Those experiencing sexual harassment are strongly encouraged to report the incidents and to seek help ([https://osmrc.uiowa.edu/](https://osmrc.uiowa.edu/)).

Free Speech and Expression:
The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principles of academic and artistic freedom. We are committed to open inquiry, vigorous debate, and creative expression inside and outside of the classroom. Visit Free Speech at Iowa for more information on the University’s policies on free speech and academic freedom ([https://freespeech.uiowa.edu/](https://freespeech.uiowa.edu/)).