

## 1 General Course Information

<b>Instructor:</b>	Rhonda DeCook, 211 Schaeffer Hall, 335-3249 rhonda-decook@uiowa.edu
<b>Time and Location - Lecture*:</b>	MWF 9:30-10:20, Lindquist Center S301 (occupancy 90 chairs)
<b>Time and Location - Lab:</b>	Approximately alternate Fridays via Zoom during lecture time. *On days when we have lab, it takes the place of lecture.
	Attendance at lab is <u>VITAL</u> to your success in the class. We will go over fundamental R commands and discuss how to use R for statistical analysis.
<b>Zoom Instructor Office Hours:</b> (or by appointment**)	Monday 1:15pm-2:45pm Tuesday 10-11:30am **Feel free to email me if you have homework clarity or R software questions.
<b>Optional Text:</b>	<i>Applied Regression Analysis &amp; Generalized Linear Models</i> , 2 <sup>nd</sup> edition, 2008 by John Fox.
<b>ICON Course Website:</b>	Our ICON website will be used to provide course materials such as homework assignments and solutions, practice exams, external links, announcements, and other course-related items.
<b>Course Goals and Objectives:</b>	Through hands-on experience in lab and homework students will learn basic methods required for data analysis and interpretation. This includes learning the methods listed in ‘Topics Covered’, as well as learning how to draw conclusions and communicate analysis results.
<b>R Software:</b>	The use of R software will be an integral part of this course. R is open-source statistical software and freely available at <a href="https://www.r-project.org">https://www.r-project.org</a> . It is also available in many computer labs on-campus, such as 41 Schaeffer Hall. See our ICON course website for links about downloading and installing R on your own machine.
<b>Final Exam:</b>	TBD around the 5th week of classes
<b>Midterm Exams:</b>	There will be three 1-hour midterm exams given during class time.
<b>Department:</b>	Statistics and Actuarial Science, CLAS
<b>DEO:</b>	Dr. Kung-Sik Chan, 241 Schaeffer Hall, 319-335-0712

## 2 R Statistical Software

As mentioned above, the use of R software will be an integral part of this course. R is open-source statistical software and freely available at <https://www.r-project.org>. It is also available in many computer labs on-campus, such as 41 Schaeffer Hall. See our ICON course website for links about downloading and installing R on your own machine. Past experience with R is not required for this course.

### 3 Topics Covered

Topics will include: simple and multiple linear regression, transformations, ANOVA, dummy-variable regression, model selection and checking, diagnostics, and logistic regression. Other topics may be covered, as well.

### 4 Tentative Class Schedule

<u>Week</u>	<u>Topic</u>	<u>Chapter</u>
1	General introduction, Examining Data & Graphical Displays	1 & 3
2	Intro to regression, Probability Review, R software intro	2, Appendix A (notation), & notes
3	Transformations , Simple Linear Regression	4, 5, & 6
4	Inference and Assumptions for Linear Regression	6
5	Multiple Linear Regression	5, 6
	<b>Midterm Exam 1: Friday, February 26, in class.</b>	
6	Dummy Variables	7
7	1-way ANOVA	8
8	Balanced 2-way ANOVA	8
9	Diagnostics 1: Outliers, Influential Points and Multicollinearity	11 & 13
	<b>Midterm Exam 2: Wednesday, March 24, in class.</b>	
10	Diagnostics 2: Non-normality, Non-constant Variance, Adequacy, and Model Selection	12 & 22
11	Logistic Regression	14, 15
	<b>No class Wednesday 4/14: Instructional Break Day.</b>	
12	Finish Logistic Regression	14, 15
13	Poisson Regression	15
	<b>Midterm Exam 3: Friday, April 16, in class.</b>	
14	Options: Polynomial Regression, Bootstrapping, or Tree Models	17 & 21
15	Oral presentations & Class evaluations	
16	<b>Final Exam: TBD</b>	

### 5 Grading Policy

Assessment in this course will be based on the following components:

<b>Weekly Homework (HW)</b>	10%	Usually assigned on a Wednesday and due the following Wednesday. A few assignments may be due the following Monday in order to have HW graded and returned before exam time. HW turned-in 1 day late will get a 25% reduction. No late HW will be accepted at 2 days late.
<b>Project</b>	20%	A project will be assigned in the second half of the semester and completed in groups of 3 or 4 students. Included in the assignment is the oral presentation of the statistical analysis during the final week of class.
<b>Midterm Exams*</b>	45%	Exam 1 - 15%, Exam 2 - 15%, Exam 3 - 15% There will be three 1-hour midterm exams given in class. For each, you may use <u>one side</u> of an 8.5"x11" piece of paper with <u>handwritten</u> notes.
<b>Final Exam</b>	25%	The final exam will be comprehensive. You may bring four one-sided 8.5"x11" pieces of paper to the final with <u>handwritten</u> notes.

\*No make-up exams 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). Missed exams receive a score of 0.

As an approximate guide, grades will be given as:

90-100	A
80-90	B
70-80	C
60-70	D
Below 60	F

Plus and minus grades will be given as deemed appropriate.

## **6 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.

## **7 Resources for Additional Help**

- *Professor Office Hours*: Office hours are a great resource for students. Please take advantage of them.
- *Private For-Pay Tutors*: The Department of Statistics and Actuarial Science maintains a list of private tutors at <https://stat.uowa.edu/resources/tutoring>

## **8 Integrity of Course Materials**

Please be aware that the materials created by the instructor are not to be publicly disseminated. To preserve the integrity of the course materials, no course materials should be made public through either online postings or handwritten means. This includes homework, homework solutions, exams, exam solutions, lecture notes, and any instructor-created videos.

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## **9 UI and the College of Liberal Arts and Sciences - Information for Undergraduates**

### **Class Behavioral Expectations:**

Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the Code of Student Life. This includes the policies and procedures that all students have agreed to regarding the Steps Forward for Fall 2020 in response to the COVID-19 pandemic. Particularly, all students are required to wear a face covering when in a UI building, including a classroom. In addition, the density of seats in classrooms has been reduced; in some instances, this will allow 6 feet or more between students while other cases, it may be less. Regardless, wearing a face covering and maintaining as much distance as possible are vital to slowing the spread of COVID19. In the event that a student disrupts the classroom environment through their failure to comply with the reasonable directive of an instructor or the University, the instructor has the authority to ask that the student immediately leave the space for the remainder of the class period. Additionally, the instructor is asked to report the incident to the Office of Student Accountability for the possibility of additional follow-up. Students who need a temporary alternative learning arrangement related to COVID-19 expectations should contact Student Disability Services arrangements/; +1 319 335-1462)

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

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).

**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, military service obligations, unavoidable circumstances, or University authorized activities. Students may use the CLAS absence form to aid communication with the instructor who will decide if the absence is excused or unexcused. The form is on ICON in the top banner under “Student Tools.” More information is at <https://clas.uiowa.edu/students/handbook/attendance-absences>.

**Class Recordings - Privacy and Sharing:**

Some sessions of a course could be recorded or live-streamed. Such a recording or streaming will only be available to students registered for the course. These recordings are the intellectual property of the faculty, and they may not be shared or reproduced without the explicit written consent of the faculty member. Students may not share these sessions with those not in the class; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and, in some cases, a violation of the Federal Education Rights and Privacy Act (FERPA).

**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.

**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.

**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 info <https://sds.studentlife.uiowa.edu/>.

**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).

**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/>.

**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>.

**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; see this page for more information: <https://clas.uiowa.edu/students/handbook/student-rights-responsibilities>.