

**The University of Iowa
The College of Liberal Arts and Sciences
Fall 2022**

Title of Course: STAT:5200

Course meeting time and place:

Lectures: 12:30-1:20 PM MWF 30 SH

Labs: 8:30-9:20 AM F 41 SH

Department of Statistics and Actuarial Science: <https://stat.uiowa.edu>

Course ICON site: To access the course site, log into [Iowa Courses Online \(ICON\)](https://icon.uiowa.edu/index.shtml) <https://icon.uiowa.edu/index.shtml> using your Hawk ID and password.

Course Home:

For Undergraduate Courses: The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, the “second-grade only” option (SGO), academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

For Graduate Courses: The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the policies and procedures for its courses. Graduate students, however, must adhere to the [academic deadlines set by the Graduate College](#).

Prerequisites: STAT:3101 ([22S:131](#)) or equivalent, and knowledge of matrix algebra.

Corequisites: STAT:4100 ([22S:153](#)) or STAT:5100 ([22S:193](#)).

Instructor: Joyee Ghosh

Office location: 372 SH

Student drop-in hours:

Monday and Friday: 2:00-3:00 PM by **Zoom**

Wednesday: 2:15-3:15 PM at **241B SH**

Students are invited to drop by during these hours to discuss questions about the course material or concerns. I am available by appointment if you are unable to attend my drop-in hours.

Phone: 319-335-0816

E-mail: joyee-ghosh@uiowa.edu

**DEO: Professor Kung-Sik Chan, Office: 241 SH, Email: kung-sik-
chan@uiowa.edu**

Description of Course and Learning Objectives:

The main topic of this course is regression analysis, which involves modeling data, as well as accompanying diagnostic methods (to see if the model fits well) and statistical inference (to see how much we can infer from the fitted model about the population from which the data have been collected).

This is an applied statistics course, and some of your work will involve data analysis, computing and communicating statistical results. On the other hand, this is a graduate-level statistics course, and hence we will cover the material in some technical depth. We will cover chapters 1 through 7 of the textbook in the first eleven weeks or so. We will then cover chapters 9, 11 and/or other topics as time permits.

Textbook/Materials: Introduction to Regression Modeling, Abraham and Ledolter.

Academic Honesty and Misconduct:

All students in CLAS courses are expected to abide by the [CLAS Code of Academic Honesty](#). Undergraduate academic misconduct must be reported by instructors to CLAS according to [these procedures](#). Graduate academic misconduct must be reported to the Graduate College according to Section F of the [Graduate College Manual](#).

Student Complaints:

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the Director or Chair of the school, department, or program offering the course.

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS [Associate Dean for Graduate Education and Outreach and Engagement](#) when additional support is needed.

Drop Deadline for this Course:

You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the [drop deadline for this course](#) here. When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the [Registrar’s website](#). Undergraduate students can find policies on dropping and withdrawing [here](#). Graduate students should adhere to the [academic deadlines](#) and policies set by the Graduate College.

Labs: We will use the statistical language R for this course, which can be downloaded from <https://cran.r-project.org/> and is installed in the lab. Attendance in the labs is

important for your success in the course. This is where you will learn how to use R (including under Linux), and use it for your assignments and project.

Homework assignments:

I expect to give weekly homework assignments covering both theory and applied problems. I will usually assign the homework on Wednesday and it will be due on ICON the following Wednesday. The lowest HW score will be dropped to accommodate missed HW due to illness and other unavoidable circumstances.

HW should show name and HW number written at the top of the first page. Please upload HW as Word or PDF documents. You may take a picture of your handwritten HW and embed in Word. If you have an iPhone, you can use the ``Notes" app to create a new note. Choose the camera icon and then select ``Scan Documents". This automatically saves all the scanned handwritten pages in a single PDF file. Please be considerate to the grader and double check that your uploaded scanned documents are readable (not too small or large fonts etc.).

You can discuss homework assignments with me or other students, but the final write-up should be from your own understanding. While assignments do not have to be type-written, please provide figures or R code, when applicable.

Project: For the project you can either identify an appropriate dataset for which multiple linear regression/logistic regression is applicable, or create an interesting simulation study (for example severe multicollinearity, small sample size relative to the number of predictors, nonnormal errors for linear regression etc.) and generate fake data under it. The goal would be to analyze the real dataset using some of the statistical methods taught in class or compare the performance of different methods using simulation studies. You may include methods that have not been taught in class, but then you would be expected to have a good understanding of those methods. Some good resources for datasets are the DASL Library (The Data and Story Library) at <http://lib.stat.cmu.edu/DASL/>, the UCI Machine Learning Repository at <http://archive.ics.uci.edu/ml/>, and the MASS library in R. Please do not analyze data that have already been used in lectures, labs or homework assignments. You will submit i) a project proposal and ii) slides for an oral presentation to the class. The final presentation should address the following:

- Objective
- Brief description of the data (source, variable key etc. or simulation set up)
- Statistical methods used for data analysis/simulation study
- Summary of results (presented as figures or tables when applicable)
- Discussion of findings and your interpretation, any shortcomings, and/or future work
- Appendix for R code

Once you have identified the dataset or simulation topic, please submit a brief (maximum one-page description but can have extra pages of plots) project proposal by

Wednesday, November 2, 2022. I am happy to talk with you about any questions regarding the project. The slides will be due on Tuesday, November 29, 2022, and the presentations (approximately 15 minutes each) will be on November 30 and December 2, 2022.

Exams:

There will be a closed book 50 minutes midterm exam in class on Wednesday, October 19, 2022 (tentatively). You may bring a 8.5" by 11" hand-written formula sheet (write on one side only).

There will be a closed book two hours final exam (date to be announced later). You may bring a 8.5" by 11" hand-written formula sheet (write on both sides).

If an exam is missed, a make-up exam will be permitted only if the circumstances of missing the exam satisfy university policy (documentation will be required in such a case).

Quizzes:

There will be some (2-3) short quizzes to help you keep up with the material covered in class. The quizzes will be closed book and I will announce the date and syllabus around one week before each quiz. The policy for make-up quizzes is same as that of exams.

Attendance:

Regular attendance is expected.

Grading System and the Use of +/-:

A plus-minus grading system will be used. As a rough guide A,A-: 90-100%, B+,B,B-: 75-90%, C+,C,C-: 50-75%, D+,D,D-: 40-50%, F:<40%.

I may lower the cut-offs depending on the difficulty of the exam. The A+ grade is rarely awarded.

Course Grades:

Final course grades will be assessed based on the following:

- Homework assignments (10%)
- Project (15%)
- Midterm exam (25%)
- Final exam (35%)
- Quizzes (15%)

Date and Time of the Final Exam:

The final examination date and time will be announced by the Registrar generally by the fifth week of classes and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** According to Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a

change if an exam conflict exists or if a student has more than two exams in one day (see the [policy](#) here).

College of Liberal Arts and Sciences (CLAS) Course Policies:

[Attendance and Absences](#)

University regulations require that students be allowed to make up examinations which have been missed due to illness or other unavoidable circumstances. Students with mandatory religious obligations or UI authorized activities must discuss their absences with me as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Barring illness and family emergencies, credit will not be given for late work. If you have to miss a class, please read the material covered on that day before coming to the next class. This will help you get the most out of lectures.

[Exam Policies](#)

Communication: 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.

Other Expectations of Student Performance

Activities which are unacceptable are (1) prolonged conversation with a fellow student, (2) the use of cell phones, and (3) the use of laptops/tablets etc. in class.

Please remember to switch your phones to silent mode before class starts and put away laptops/tablets/phones etc. when in class.

Where to Get Help

Tutor Iowa: <https://tutor.uiowa.edu/>

University Policies

[Accommodations for Students with Disabilities](#)

[Basic Needs and Support for Students](#)

[Classroom Expectations](#)

[Exam Make-up Owing to Absence](#)

[Free Speech and Expression](#)

[Mental Health](#)

[Military Service Obligations](#)

[Non-discrimination](#)

[Religious Holy Days](#)

[Sexual Harassment/Misconduct and Supportive Measures](#)

[Sharing of Class Recordings](#)