

STAT:2010 STATISTICAL METHODS AND COMPUTING Fall 2023

Instructor: Prof. Erning Li, 231 SH, 335-0820, erning-li@uiowa.edu

Office hours: MWF 1:00–2:00 pm, and by appointment.

Teaching Assistant (Lab instructor): Ting-Hung Yu, ting-hung-yu@uiowa.edu

Office hours: MW 11:30am–1:00pm in 213 SH, and by appointment.

The TA is the instructor of all lab/discussion sessions and holds regular office hours. Lab/discussion materials will be posted in ICON main course website under “Modules.”

Grader: Zhenhan Fang, zhenhan-fang@uiowa.edu

Please contact the grader in case of grading issues about homework.

Department Information: Department of Statistics and Actuarial Science, 241 SH, 335-2082.

DEO: Professor Kung-Sik Chan, 241 SH, 335-0712, kung-sik-chan@uiowa.edu

Class Meetings:

Lectures: MW 10:30-11:20 am, W151 PBB.

Labs/Discussions: Friday, 41 SH (computer lab).

Each student should have registered for ONE of the four lab/discussion sessions, and will only need to attend that one session. During most labs, under the instruction and demo of the TA, students need to log into UI virtual desktop to use the SAS software.

SAS Software: a statistical software package that is widely used in business, industry, government, and research. Computing using SAS is taught and required throughout the semester. Students can use SAS on the university’s Virtual Desktop at no cost.

Required Textbook:

The Basic Practice of Statistics, 9th edition, by Moore, Notz, and Fligner, 2021, Macmillan Learning.

Note: This textbook is provided through ICON Direct (access under “ICON Direct eTexts” in ICON) and your U-Bill will be charged for this e-text, unless you *opt out* (<https://teach.uiowa.edu/icon-direct-opt-out>) prior to the “tuition and fee reduction” course deadline (<https://registrar.uiowa.edu/course-deadlines>).

Faculty are not responsible for providing students with alternative materials or waiving course requirements. I impose no restriction on the version (e-book, paper book, loose-leaf, or used) of the textbook that students obtain. Nearly all of the textbook contents will be covered in this course and many exercises from the textbook will be assigned.

Recommended resources:

The Little SAS Book, Delwiche and Slaughter, 2012, SAS Institute.

Search for the book title with infoHawk+ at <https://www.lib.uiowa.edu> to access this e-book for free.

ICON Course Website: <https://icon.uiowa.edu/> (log into and choose this course)

- Course materials including syllabus, lecture notes, lab/discussion materials, homework assignments, online quizzes, grades, answer keys, etc. will be posted on ICON. Check ‘Modules’ regularly for updates.
- Submit homework and do quizzes by their deadlines in ‘Assignments’.

Communication: UI Email—have your UI email address in the class roster and use it when corresponding with Prof. Li via email (state the course number or title in your email). Important announcements to the class will be emailed via the ICON class roster.

Course Description and Objectives: Through hands-on experience with real data from a wide variety of applications, students will learn basic methods required for data analysis and interpretation. The emphasis will be on formulating questions, choosing appropriate statistical techniques for a given problem, verifying whether the assumptions behind the techniques are met by the dataset, drawing appropriate conclusions from the analysis, and communicating the results. Students will learn to use SAS to produce data visualization and analysis results. GE (General Education): Quantitative or Formal Reasoning.

This is an introductory statistics course with focus on methodology and reasonings, applications and hands-on data analysis, and basic statistical computing. Upon completion of the course students are expected to

- gain good understanding of statistical concepts, reasoning, and logic of statistical inference;
- understand and interpret basic statistical analysis results;
- conduct basic data visualization and analysis using SAS;
- appropriately deliver statistical findings.

Regular Homework: Regular homework will be assigned periodically in ICON; mostly week-long assignments. Students will turn in their assignment using file upload in ICON by its due date and time. Please submit your homework in Word doc, pdf files, or clear, readable scans/images of reasonable size. Please double check your submission each time, as points will be deducted if submission cannot be opened or read, or has missing pages. All homework assignments are essential, vital practices and will be counted towards overall grade.

Unless prior or prompt arrangements are made for reasons judged to be acceptable by Prof. Li, homework turned in after it is due will receive 0 (zero) credit. Homework submitted via email to me or grader won’t be accepted/graded. Additionally, as answer keys will be posted soon after an assignment is graded, late homework submission will only be considered in exceptional circumstances and with prior or prompt notification.

Students are allowed to discuss homework assignments, but every student is responsible for submitting their own work, reflective of their own effort (write up their own individual answers and do their own individual SAS computing). If “blind copying” in a student’s answer

sheets is identified, all involved students will receive zero score and be considered as plagiarism. Discussions among students can be posted on the ICON Discussion Boards; notice that Discussion Board posts are public that everyone in the class will be able to read all of the posts and responses, and respond to them.

Low-stakes Quizzes: Prior to an exam, an online quiz will be given in ICON as a practice and discussed in class.

Exams:

Midterm Exam 1 **Monday, October 2**, 10:30-11:20 am (tentative)

Midterm Exam 2 **Monday, November 6**, 10:30-11:20 am (tentative)

Final Exam **TBA by the University**

You can bring one standard letter-size (8.5in \times 11in like regular printer paper) sheet of paper with anything you want written or typed on both sides to each midterm exam, and three such self-prepared help sheets to the final exam. Also bring a scientific calculator (any type) to each exam. Other than these, all exams are closed-book and closed-notes.

Any unexcused absence from an exam will result in a score of zero with no opportunity for a makeup. A makeup exam (different but equivalent to the original) will be considered only with documentation of reasons required by the university policy and under prior or prompt arrangement made with Prof. Li, and it should be scheduled as soon as possible.

All exams and makeups are in-person and proctored. These exam rules apply to all exams and makeups.

The midterm exams are given at regular class meeting times. The final examination date and time will be announced by the Registrar generally by the fifth week of classes. It is your responsibility to know the date, time, and place of the final exam. Do not schedule your end-of-semester travel plans until the final exam schedule is announced by the University.

Grading: A numerical final score on the scale of 0 to 100 will be determined according to the following (tentative) breakdown

Regular homework	17%
Low-stakes quizzes	3%
Midterm exam 1	24%
Midterm exam 2	24%
Final exam	32%

Conversion of these scores into letter grades will be made according to the following scale:

[90, 100] A; [80, 90) B; [65, 80) C; [50, 65) D; < 50 F.

At the discretion of Prof. Li, depending on class performance and attendance/participation in lectures and TA discussions, these ranges may be adjusted, but only downward—criteria will only become easier, not harder.

Plus (+) and minus (–) gradings will be given as deemed appropriate. A+ grade will be used to indicate rare and extraordinary academic achievement.

Integrity of Course Materials: I request that you preserve the integrity of the course materials. This means that under no circumstance should you make public (either in print or via web postings, social networks, etc.) or disseminate any course materials such as lecture notes, handouts, assignments, exams, quizzes, solutions, recordings, textbook, reference books, etc. You must also strive to avoid making use of any solutions provided by anyone outside of this class. Compliance with this request will be considered part of the academic honesty requirements discussed further below under Administrative Policies.

Attendance and Classroom Environment: Participation in course activities (in both lectures and labs) is very vital to your success in this course. Students are expected to attend all lectures and labs. Roll may be taken on random days. Students who are absent from class without acceptable excuse should not seek help regarding missed lectures during my office hours.

When in class, please refrain from talking on cell phones, texting, using laptops/tablets (if not for note-taking purpose), and prolonged conversation with a fellow student. Wireless-capable devices such as laptops, tablets, smart phones, etc. must be put away during exams.

Extra Help:

- Statistics Tutorial Lab: Extra help beyond office hours is available for free at the Statistics Tutorial Lab. During available times, a graduate student will be present to assist you. Hours for the lab will be posted at
<https://stat.uiowa.edu/resources/tutoring>
- Private For-Pay Tutors: The Department of Statistics and Actuarial Science maintains a list of private tutors at
<https://stat.uiowa.edu/resources/tutoring>
- Note that for qualified students, tutoring may be available through The Center for Diversity and Enrichment
<https://diversity.uiowa.edu/division/center-diversity-and-enrichment-cde>

Course Schedule and Topics (tentative):

Week 1-2	Chapters 1-2	basic fundamental concepts, SAS computing tutorial, variables, graphical and numerical summaries of data
Week 3	Chapters 4, 5, 7	scatterplots, correlation, regression
Week 4	Chapter 3	Normal distributions
Week 5-6	Chapters 8-11	sampling, experiments, data ethics
midterm 1		(tentative coverage chap 1-11)
Week 7	Chapters 12-14	intro to probability, Binomial distributions
Week 8-9	Chapters 15-16	sampling distributions, basics of confidence intervals
Week 9-10	Chapters 17-19	basics of tests of significance, inference in practice
Week 11-12	Chapter 20	inference about a population mean
midterm 2		(tentative coverage chap 12-19)
Week 12-13	Chapters 20-21	comparing two means: pooled t test, welch's t test, paired t test
Week 13	Chapters 23-24	comparing two proportions
Week 14	Chapter 25	two categorical variables: the chi-square test
Week 15	Chapter 26	inference for regression
Finals week		final exam (comprehensive with emphasis on Chap 20-26)

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by [the CLAS Code of Academic Honesty](#).

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor, 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 [Registrars 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.

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](#)