

Course Syllabus

[Edit](#)

Intermediate Statistics - MA 331-A

School of Engineering and Science, Fall 2023

Instructor: [Xiaohu Li](#)

Meeting Time: [9:30 - 10:45 am, Tuesday and Thursday](#)

Classroom Location: [Babbio 122](#)

Office Hours: [3:30 pm - 4:30 pm, Tuesdays/Thursdays or by appointment](#)

Contact Info: Office: [North Building 224](#). E-mail: xiaohu.li@stevens.edu. Phone: [201 216 3608](#)

Canvas Course Address: <https://sit.instructure.com/courses/60139>

Prerequisite(s): [MA 222](#)

Corequisite(s): [N/A](#)

Cross-listed with: [N/A](#)

COURSE DESCRIPTION

This course introduces fundamental statistical methods commonly used in engineering, finance, business, and biomedicine etc. It mainly covers graphical statistics, parameter estimation methods, confidence interval and hypothesis testing on normal distribution, two way table analysis on categorical data, analysis of variance of the grouped numerical observations, linear regression model on the association between the response variable and covariates. In addition to the logic and ideas, the methods are also illustrated by using the related R packages as well.

STUDENT LEARNING OUTCOMES

MA331 aims to provide the essential ideas and methodology of applied statistics including data analysis and statistical inference, and it is also designed to make students skillful in using statistical software R.

After successful completion of this course, students will be able to...

- Use graphical methods, tables and statistics to describe the distribution of a data set.
- Estimators of population mean, variance and proportion.
- Construct confidence intervals for mean, proportion and variance of a population.
- Accomplish statistical tests on mean, proportion and variance of a population.
- Do statistical inference on two way table data set.
- Conduct analysis of variance on the grouped data set.
- Perform linear regression on the data on response and covariates.

COURSE FORMAT AND STRUCTURE

This course is comprised of weekly lectures, homework assignments, quizzes and two exams.

Course Logistics

- Everybody is supposed to preview the materials before each session and read through related sections of the textbook before working the homework problems.
- The homework assignment for each session is [due by 12:00am EST on the due data](#) listed in the course assignments. You are expected to upload the [pdf document of the scanned version of your work](#).
- Deadlines are an unavoidable part of being a professional, and this course is no exception. Course requirements must be completed and posted or submitted on or before the specified due date and delivery time deadline. Due dates and delivery time deadlines are in Eastern Time (as used in Hoboken, NJ). Please note that students living in distant time zones or overseas must comply with this course time and due date deadline policy. Avoid any inclination to procrastinate. Due dates have been established for each assignment to encourage you to stay on schedule
- [Assignments received 1-6 days late will have 18% of the total points deducted; assignments received more than one week late will receive 0 points.](#)
- An assignment file should be appended by your username, such as "Assignment01Kim53.pdf". This makes it easier for me to manage assignment files you download to my computer.

Instructor's Online Hours

I will be available via email and respond as soon as I am available ([generally within 24-48](#)). For the online discussions, I will check in [at least three times per week](#). Keep in mind that it is not possible for me to respond to every single posting every week (nor is it pedagogically appropriate), but I will be sure to respond to various postings and students each week and attempt to assure equality in terms of responses to students. Furthermore, there is a specific discussion forum that you can use to ensure that you have my attention – to ask questions or to call my attention to a particular discussion you are engaged in that you would like me to take a look at. If you feel you are being neglected in any way, please contact me. When emailing me, please place in the subject line the course number/section and the topic of the email (i.e., XXX 240 – Assignment 2 Question). This will help me tremendously in locating your emails quicker when I scan the hundreds of emails that seem to make it into my box each day.

Virtual Office Hours

Virtual Office Hours are a synchronous session ([through Zoom](#)) to discuss questions related to weekly readings and/or assignments. Office hours will be held [Monday afternoon from 4:00-5:00 pm EST](#). To connect to the weekly session, click the [Zoom button](#) on the left panel.

Online Etiquette Guidelines

Your instructor and fellow students wish to foster a safe online learning environment. No matter how different or controversial they may be perceived, all opinions and experiences must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea, but you cannot attack an individual. Our differences, some of which are outlined in the University's inclusion statement below, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambiance. Please read the Netiquette rules for this course:

- Do not dominate any discussion. Allow other students to join in the discussion.
- Do not use offensive language. Present ideas appropriately.
- Be cautious in using Internet language. For example, do not capitalize all letters since this suggests shouting.
- Avoid using vernacular and/or slang language as it could lead to misinterpretation.
- Keep an "open-mind" and be willing to express even your minority opinion.
- Think and edit before you push the "Send" button.
- Do not hesitate to ask for feedback.

COURSE MATERIALS

- **Textbook(s):** *Introduction to the Practice of Statistics*, 8th edition
D. Moore, G. McCabe and B. Craig
WH Freeman and Co, 2014
ISBN-10: 1-4641-5983-2, ISBN-13: 978-1-4641-5893-3
- **Other readings:** Online lectures through Canvas course shell
Comments on your solutions of homework problems
- **Materials:** *Probability and Statistics with R*, 2nd edition
María Dolores Ugarte, Ana F. Militino and Alan T. Arnholt
2016, Taylor & Francis
ISBN-13: 978-1-4665-0441-7

TENTATIVE COURSE SCHEDULE

Week No.	Topics to be covered	Readings
01 - 03	Descriptive statistics, Sampling distributions, estimators of population mean, variance and proportion, Confidence intervals	Chapters 2, 3, 5, 6
04 - 05	One sample tests on population mean, proportion and variance	Chapters 7, 8
05 -06	Two sample tests on population means, proportions, and variances	Chapters 5, 6, 7, 8
07	Midterm exam	
08 -09	Two-way table, Analysis of variance	Chapters 9,

09 - 10	Analysis of variance, Simple linear regression	Chapters 9, 10
11 -12	Simple linear regression, Least square estimate, Residual analysis	Chapter 9
13	Final exam/project	

Remarks: The schedule may be subject to small changes.

COURSE REQUIREMENTS

Attendance: The attendance is to be [collected 10 times at random](#), and two absences are to be excused.

Participation: [In-class and online discussions](#).

Homework: [8 homework assignments \(posted at Assignments\)](#).

Quizzes: [Two quizzes \(announced one week in advance\)](#).

Project(s): [None](#).

Exams: [Midterm and final exams](#).

TECHNOLOGY REQUIREMENTS

Baseline technical skills necessary for online courses

- Basic computer and web-browsing skills
- Navigating Canvas

Technology skills necessary for this specific course

- Live web conferencing using Zoom
- Recording a slide presentation with audio narration
- Recording, editing, and uploading video via Kaltura

Required Equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone

Required Software

- N/A

GRADING PROCEDURES

Grades will be based on:

Attendance	Discussion	Homework	Quizzes	Midterm exam	Final exam
5%	5%	30%	15%	20%	25%

Grading Policy

Grades will be based on the following scale:

A	A-	B+	B	B-	C+	C	C-	D	F
[90,100]	[86, 90)	[82, 86)	[78, 82)	[74, 78)	[70, 74)	[64, 70)	[60, 64)	[50, 60)	[0, 50]

Late Policy

- Assignments received 1-3 days late will have 3% of the total points deducted for each day;
- Assignments received late more than three days will receive 0 points.


Academic Integrity

Different academic integrity policies apply depending on the course level and status of enrolled students (undergraduate versus graduate). You will need to include **some portion** of the following three policies in this section of your syllabus.

Please Note:

- The Honor System binds students in undergraduate courses (100-400 level).
 - If you teach a strictly undergraduate course, you should include the Undergraduate Honor System portion only.
- The Graduate Student Code of Academic Integrity binds students in graduate courses (600 level and above).
 - If you teach a graduate course, you should only include the Graduate Student Code of Academic Integrity portion.
- Graduate students in 500-level courses are bound by the Graduate Student Code of Academic Integrity, while undergraduate students in those courses have special provisions that have been agreed upon by the Dean of Graduate Academics and the Honor Board.
 - If you teach a 500-level course, be sure to include both the Undergraduate Honor System and the Special Provisions for Undergraduate Students in 500-level Courses portions.


Undergraduate Honor System

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student's commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution. More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at <http://web.stevens.edu/honor/> 

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

"I pledge my honor that I have abided by the Stevens Honor System."

Reporting Honor System Violations

Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at www.stevens.edu/honor .

EXAM CONDITIONS


The following procedures apply to quizzes and exams for this course. As the instructor, I reserve the right to modify any conditions set forth below by printing revised Exam Conditions on the quiz or exam.

Material	Permitted?(Yes/No)
Handwritten Notes: A letter size note sheet	Yes
Typed Notes: A letter size note sheet	Yes
Textbooks: Recommended	No
Readings: Lecture notes	No
Other (specify) Smart phone, i-pad, Laptop	No

1. Only materials mentioned in the list above are not permitted during quizzes or exams.
2. Students are/are not allowed to work with or talk to other students during quizzes and/or exams.
3. Specific Parameters: [if you permit students to communicate with each other during exams, be sure to explain exactly what is permitted.]

LEARNING ACCOMMODATIONS

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

For more information about Disability Services and the process to receive accommodations, visit <https://www.stevens.edu/office-disability-services> . If you have any questions please contact: Phillip Gehman, the Director of Disability Services Coordinator at Stevens Institute of Technology at pgehman@stevens.edu or by phone 201-216-3748.

Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

INCLUSIVITY

Name and Pronoun Usage

As this course includes group work and class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform the instructor of the necessary changes.

Inclusion Statement

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in academic discourse and innovation. In this class, the perspective of people of all races, ethnicities, gender expressions and gender identities, religions, sexual orientations, disabilities, socioeconomic backgrounds, and nationalities will be respected and viewed as a resource and benefit throughout the semester. Suggestions to further diversify class materials and assignments are encouraged. If any course meetings conflict with your religious events, please do not hesitate to reach out to your instructor to make alternative arrangements.

You are expected to treat your instructor and all other participants in the course with courtesy and respect. Disrespectful conduct and harassing statements will not be tolerated and may result in disciplinary actions.

MENTAL HEALTH RESOURCES

Part of being successful in the classroom involves a focus on your whole self, including your mental health. While you are at Stevens, there are many resources to promote and support mental health. The Office of Counseling and Psychological Services (CAPS) offers free and confidential services to all enrolled students who are struggling to cope with personal issues (e.g., difficulty adjusting to college or trouble managing stress) or psychological difficulties (e.g., anxiety and depression). Appointments are can be made by phone (201-216-5177).

EMERGENCY INFORMATION

In the event of an urgent or emergent concern about the safety of yourself or someone else in the Stevens community, please immediately call the Stevens Campus Police at 201-216-5105 or on their emergency line at 201-216-3911. These phone lines are staffed 24/7, year round. For students who do not reside near the campus and require emergency support, please contact your local emergency response providers at 911 or via your local police precinct. Other 24/7 national resources for students dealing with mental health crises include the National Suicide Prevention Lifeline (1-800-273-8255) and the Crisis Text Line (text "Home" to 741-741). If you are concerned about the wellbeing of another Stevens student, and the matter is *not* urgent or time sensitive, please email the CARE Team at [**care@stevens.edu**](mailto:care@stevens.edu). A member of the CARE Team will respond to your concern as soon as possible.