

# Stat 60: Introduction to Statistics.

Lecture MWF 10:30-11:50

Section Th 9.30-10:20

## Teaching team

	Email@stanford.edu	Role	Q&A sessions	Where
Olga Dekhtyar	<a href="mailto:odekhtya@stanford.edu">odekhtya@stanford.edu</a>	Instructor	MWF 10:30 - 11:50am	320-109
Apratim Dey	<a href="mailto:apd1995@stanford.edu">apd1995@stanford.edu</a>	TA		200-107
Dileka Gunawardana	<a href="mailto:dilekag@stanford.edu">dilekag@stanford.edu</a>	TA		200-107
Sophia Lu	<a href="mailto:sophialu@stanford.edu">sophialu@stanford.edu</a>	TA		200-107
Jing Shang	<a href="mailto:jshang21@stanford.edu">jshang21@stanford.edu</a>	TA		200-107

## Discussions with TA:

Tuesday/ Thursday: 10:30-11:20 in 200-107

Tuesday/ Thursday: 4:30-5:20 in 200-107

## Course Overview and Objectives

This is a first course in Statistics. The objective of the course is for students to gain a good intuitive understanding of statistical principles and methods. At the end of the course, students should be able to use elementary statistical techniques and to critically assess statistical work done by others. Topics covered include basic probability, data visualization, summary statistics, sampling, confidence intervals and statistical tests, and regression and prediction. The only prerequisite is algebra, at the high-school level. No prior knowledge of calculus will be assumed.

Statistics isn't just about staring at confusing charts and feeling like you're lost in a number jungle. It's more like tackling a brain-teasing puzzle – the kind that makes you go, "Aha!" when you finally crack it. In Stat60, we're not just crunching numbers; we're detectives on the hunt for the juicy stories hidden within data. Ever noticed how life seems to have a sneaky way of repeating itself? That's where statistics swoops in, revealing patterns and connections you never knew existed. We'll dive into the wild world of probability, where we'll learn just how likely it is for stuff to go down. And trust me, once you've got these skills down, you'll start seeing patterns everywhere – in your grades, in the prices at the grocery store, heck, maybe even in your cat's nap schedule. So get ready to embark on the adventure of Introduction to Statistics – it's not just a subject, it's your ticket to becoming a real-life Sherlock Holmes of numbers.

## Learning Goals

1. To introduce you to the basic concepts, terminology and procedures of data analysis, as well as to the logic underlying those procedures.
2. To understand how to calculate basic descriptive and inferential statistics and interpret them.
3. To acquire statistical literacy and be able to determine when, why, and how various statistical tests are used.
4. To learn a statistical software package to perform analyses of quantitative data.
5. To foster the ability to think **critically about scientific and media reports of research findings based on quantitative data.**

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## Textbook and References

- Our main reference will be the handouts, which will be made available on Canvas.
- Some useful, but not required, additional reading is:
  - **Book:** Statistics 3<sup>rd</sup> or 4<sup>th</sup> edition, by Freedman, Pisani and Purves.
  - **Supplemental:** Introduction to Probability and Statistics by Mendenhall, Beaver, Beaver ( link on Canvas)
  - **Supplemental:** Statistical Thinking for the 21st Century (free online: <https://statstinking21.github.io/statstinking21-core-site/index.html> )
  - **Supplemental:** YouTube videos will be posted on Canvas over the weekend to preview next week material.
  - **Kahoot!!! - for fun and practice!!**
- Access to JMP software (instructions how to download on Canvas)

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## Course webpage

The online course-management **Canvas** will be used in this course, grades, course announcements and weekly homework assignments will be updated here. Detailed weekly course schedule will be updated at my course webpage Stat 60.

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## Statistical Package

We will be using the *JMP 16/17* software packages for data analysis and exploration. You will be given instructions for how to use JMP as needed for this course; Instructions for the download will be posted on Canvas page. (<https://uit.stanford.edu/service/softwarelic/jmp>)

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## Course Schedule and Logistics

### Our weekly schedule is:

- **Lectures:** Monday, Wednesday, Friday: 10:30-11:50 AM in 320 -109.
- **Problem solving sessions:**
  - Tuesday and Thursday. 10:30-11:20 AM in 200-107
  - Tuesday and Thursday. 4:30-5:20 PM in 200-107

### Office hours:

- **Olga:** Monday, Wednesday, Friday: 12- 1pm in **320-109**
- **TAs:**
  - TBD

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## Course Information

**Homework and investigations (22%):** There will be several in-class investigations each week and one homework will be assigned weekly.

- For each of these investigations you will work either individually or with a group of size 2-3 (submitting one solution).
- Investigations will be due by next class.
- Homework will be assigned on Wednesday and will be due the following Wednesday by 11:59 pM.

We will be using student engagement system **Kahoot** in class. **Kahoot** is a **free** software which allows to ask multiple-choice questions during class to gauge your understanding and harness your attention.

Your homework/lab activities, quizzes, exams and participation will be combined according to the percentages shown above.

**Letter grades:** 90%-110% =A- to A+; 80%-89.99%=B- to B+; 70%-79.99% = C- to C+; 60%- 69.99%=D- to D+;

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## Students with Documented Disabilities

Students who may need academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodation, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 723-1066, online at <http://oe.stanford.edu>)

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## Stanford University Honor Code

The Stanford University Honor Code is a part of this course. It is Stanford's statement on academic integrity first written by Stanford students in 1921. It articulates university expectations of students and faculty in establishing and maintaining the highest standards in academic work. It is agreed to by every student who enrolls and by every instructor who accepts appointments at Stanford. The Honor Code states:

1. The Honor Code is an undertaking of the students, individually and collectively
  1. that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in class work, in the preparation of reports, or in any other work that is to be used by the instructor as the basis of grading;
  2. that they will do their share and take an active part in seeing to it and that others as well as themselves uphold the spirit and letter of the Honor Code.
2. The faculty on its part manifests its confidence in the honor of its own students by refraining from proctoring examinations and from taking unusual and unreasonable precautions to prevent the forms of dishonesty mentioned above. The faculty will also avoid, as far as practicable, academic procedures that create temptations to violate the Honor Code.
3. While the faculty alone has the right and obligation to set academic requirements, the students and faculty will work together to establish optimal conditions for honorable academic work.

Penalties for violation of the Honor Code can be serious (e.g., suspension, and even expulsion).  
So re-read the Honor Code, understand it, and abide by it.

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## AI-generated Code and Content

### Use of Artificial Intelligence (AI) in Assignments

Students enrolled in STAT 60 are permitted to utilize Artificial Intelligence (AI) tools to generate ideas for assignments and to obtain answers related to lecture content. However, it is imperative that all generated content is accompanied by appropriate [citations](#).

### Cautionary Note on AI Reliability

While AI tools may aid in idea generation, it is essential to recognize their limitations. Outputs produced by AI may not always be trustworthy and could potentially be deceptive. Therefore, it is incumbent upon students to verify and validate the results independently.

### Cheating and Plagiarism Policy

Any form of cheating or plagiarism facilitated by the use of AI tools will be considered a violation of academic integrity and will be referred to the University Senate for appropriate action.

### Responsible Use of AI

- Cite Sources: Ensure that all content generated by AI is properly cited, acknowledging the tool's contribution to the idea generation process.
- Verify Results: Independently verify and cross-check the results obtained from AI tools to ensure accuracy and reliability.

### Consequences of Academic Misconduct

Cheating and plagiarism, whether **with or without the use of AI**, are serious offenses that undermine the integrity of the academic community. Students found engaging in such misconduct will face disciplinary action as per University policies.

### Commitment to Academic Integrity

By enrolling in STAT60, students acknowledge their commitment to upholding the principles of academic integrity and pledge to utilize AI tools responsibly and ethically.

**Note:** This policy is subject to review and amendment as deemed necessary to maintain the integrity of the course and align with University regulations.

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## Classroom Culture

The textbooks will serve as a guide but I expect to supplement the material in the textbook extensively. It will be important for you to come to class, to participate fully, to ask questions, and to be responsible for all course handouts. This will allow us to focus more on the interpretation and presentation of statistical analyses. I cannot overemphasize the importance for you to follow along with the reading assignments and to ask questions of me for any components that are not clear. I hope to create a collaborative learning environment, where you feel comfortable asking questions and working together. Still, I do ask that when I am lecturing that you give me your complete and undivided (or at least silent) attention and that you are respectful of me and your classmates.

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## Finally:

- This stuff is '*do-able*'!-

## Tentative Schedule <sup>\*</sup>

	Dates	Topics	Textbook	Supplemental Materials	Assignments
1	06/24 06/26 06/28	Introduction to Stat60 /What is statistics.  Working with data: Categorical vs Quantitative  Summarizing /Visualizing Data	Ch:1-2   Ch:3		<b>HW#1</b>
2	07/01 07/03 07/05	Exploring Quantitative Data  Probability and Probability Rules  Conditional Probability	Ch:4  Ch13: 14		<b>HW#2</b>
3	07/08 07/10 07/12	Fitting models (central tendency)  Fitting models (central tendency)  <b>Midterm#1*</b>	Ch:5		<b>HW#3</b>
4	07/15 07/17 07/19	Sampling  Confidence Intervals  Confidence Intervals (continued)	Ch: 19-20  Ch: 21		<b>HW#4</b>
5	07/22 07/24 07/26	Hypothesis Testing Introduction  Hypothesis Testing Introduction  Hypothesis test for the mean and proportion	Ch 26  Ch 27		<b>HW#5</b>
6	07/29 07/31 08/02	<b>Midterm#2*</b>  Comparing Means: one sample t-test  Comparing Means: two sample t-test	Ch 27  Ch:27		<b>HW#6</b>
7	08/05 08/07 08/09	Modeling Continuous Data: Correlation and Regression   Modeling Categorical data	Ch:8- 12		<b>HW#7</b>
8	08/12 08/14 08/16	<b>Review for Final</b>  <b>Final*</b>  Summary of Stat60*	Ch 28		

\* This schedule is tentative and could be changed at any time during the quarter.