

MA151 Introduction to Statistics

Lecturer: Maria Uttenthal

Course times: Mondays and Wednesdays, 15.45-17.15

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Office hours: tba

Course description

This course offers an introduction to quantitative methods in economics and politics. The course covers the basics of descriptive and inferential statistics, including probability theory and hypothesis testing. At the end of the course, students will be able to understand and critically engage with these methods, which will also be explored through applied examples from social science research. Classes are complemented with exercises to build students' capacity to apply the methods they have learned. Many of these exercises use data from public opinion surveys, which cover a wide range of social, economic, and political topics. This will enable students to read and engage with modern quantitative research, and prepare them for more advanced quantitative courses in the field.

Learning outcomes

- Obtain foundational knowledge of statistics in the social sciences
- Understand and engage with methods of descriptive and inferential statistics
- Conduct statistical analyses through exercises and examples relevant to social science research

Requirements

Textbook

We will use the OpenSource Textbook "OpenIntro Statistics" by Diez/Cetinkaya-Rundel/Barr, 4th edition, 2019, (which can be freely downloaded via this [link](#)). The book will be supplemented with topics from, "Making Sense of Data through Statistics: An Introduction", by Nevo, 2nd edition, 2017, (which can be freely downloaded via this [link](#)).

Attendance

Attendance at ALL classes is expected. Absences due to illness or compelling circumstances outside of the students' control are excused if notification is given via email before the course. The instructor may require additional documentation in case of absences or frequent exams/quizzes on the day of absence. Optional non-academic travel, hosting visiting family and friends, or work schedules are not grounds for excused absences.

Academic Integrity

Bard College Berlin maintains the staunchest regard for academic integrity and expects good academic practice from students in their studies. Instances in which students fail to meet the expected standards of academic integrity will be dealt with under the Code of Student Conduct, Section 14.3 (Academic Misconduct) in the Student Handbook.

Grading

Assessment

Assessment will be based on attendance, preparation for classes, regular and active participation, professionalism (see below), quizzes, exercises as well as a midterm (60 minutes) and final examination (90 minutes).

Policy on late submission of exercises

Exercises that are up to 24 hours late will be downgraded one full grade (from B+ to C+, for example). After that, we will accept late submissions only until the end of the week in which they were due (Sun, 23:59), but these cannot receive a grade of higher than C. Thereafter, the student will receive a failing grade for the assignment.

Grade breakdown

Seminar preparation, professionalism and participation 20%

Quizzes and exercises 20%

Midterm examination (or equivalent) 30%

Final examination 30%

Schedule

Spring 2024 classes start on Monday, January 29, and run until Friday, May 10, with spring break planned from March 25 to March 29. Completion week will be from May 13 to May 17.

Students are required to be on campus during completion week and the final exam will be scheduled during this week. Scheduled class times are available online under the relevant course heading: <https://berlin.bard.edu/academics/courses/>

The schedule provided is provisional in order to allow for flexibility. It is the students' responsibility to keep themselves informed of any changes to the schedule provided here. An up-to-date schedule will be maintained by the course management online in Google classroom. The password to join Google classroom will be handed out in class.

Topics and schedule

Week 1-2: *Introducing data and measurement*

- Motivation, the big picture
- Observations and variables, levels of measurement, sampling
- Conceptual and operational definitions, measurement error

Week 2-3: *Describing data*

- Visualisations: Scatterplots, histograms, boxplots
- Measures of central tendency and dispersion

Week 4-5: *Probability*

- Rules of probability, joint and conditional
- Distributions, densities, random variables

Week 6: Normal distribution and z-scores

- Central limit theorem, calculating z-scores

Week 7: Review and midterm exam

Week 8: Introducing statistical inference and confidence intervals

- t-distribution, standard errors, confidence intervals, sampling proportions
- Hypothesis testing, type I and type II errors

Spring break

Week 9-10: Statistical inference for categorical data

- Cross-tabs, partial effects
- Chi-square tests

Week 11-12: Statistical inference for numerical data

- Differences in means, t-tests (comparing two groups)
- ANOVA (comparing many groups)

Week 13: (Optional) Introducing linear regressions

- OLS estimation, interpretation of coefficients, R-squared
- Model specification, comparing models

Week 14: Review

Final exam

→ The lecturer reserves the right to adjust the topics and timeline, ensuring the appropriate level and pace of the course.

→ Classes missed due to federal holidays will not be rescheduled.

Professionalism

Being a student is your full-time job and with it comes a set of responsibilities and expectations, as with any other job. Maintaining a professional attitude towards your course of study is something that also prepares you for later work life. A professional attitude towards your studies is shown by coming to class on time, being prepared, being courteous to your teachers and fellow students. It is exhibited by completing your exercises with care, actively participating in class, avoiding distractions (excessive bathroom breaks, using smartphones to check on irrelevant issues during class etc.), not missing classes except for the direst of circumstances, and in general by adapting to the rules of the course without trying to bargain for personal exceptions.

Ethics/Academic honesty

A core value of the academy is truth and the pursuit thereof. Nothing can shake the foundations of this pursuit as much as academic dishonesty, as it undermines the trust that is indispensable to it. This is why any instance of academic dishonesty will not be excused. Plagiarism, cheating during exams, copying homework assignments (or doing individual assignments with a classmate) all constitute violations of academic honesty and of the clause on “academic integrity” that each student has signed in the student handbook. They can lead to failing the course and will be reflected in the student’s record (having a record of academic dishonesty can make obtaining scholarships, achieving a study abroad place, or admission to another program difficult if not outright impossible). If students fail to meet the expected standards of academic integrity, this will be dealt with under the Code of Student Conduct, Section III Academic Misconduct.

(Version: 21.12.2023)