

INTRODUCTION TO BIOSTATISTICS - STA 102

Fall 2018

Course Goals and Objectives:

This course introduces students to the discipline of statistics as a science of understanding and analyzing data. Throughout the semester, students will learn how to effectively make use of data in the face of uncertainty: how to collect data, how to analyze data, and how to use data to make inferences and conclusions about real world phenomena. The course goals are as follows:

1. Recognize the importance of data collection, identify limitations in data collection methods, and determine how they affect the scope of inference.
2. Use statistical software to summarize data numerically and visually, and to perform data analysis.
3. Have a conceptual understanding of the unified nature of statistical inference.
4. Apply estimation and testing methods to analyze single variables or the relationship between two variables in order to understand natural phenomena and make data-based decisions.
5. Model numerical response variables using a single or multiple explanatory variables.
6. Interpret results correctly, effectively, and in context without relying on statistical jargon.
7. Critique data-based claims and evaluate data-based decisions.
8. Complete a research project demonstrating mastery of statistical data analysis from exploratory analysis to inference to modeling.

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Course Pages:

1. <http://yourWebPage1.com/teaching>
2. <http://yourWebPage2.com/teaching>

Office Hours: After class, or by appointment, or post your questions in the forum provided for this purpose on AeLP.

Main References: This is a restricted list of various interesting and useful books that will be touched during the course. You need to consult them occasionally.

- Christopher M. Bishop, *Pattern Recognition and Machine Learning*, Springer, 2006.
- Peter J. Carrington, John Scott, and Stanley Wasserman, *Models and Methods in Social Network Analysis*, Cambridge University Press, 2005.
- Richard O. Duda, Peter E. Hart, and David G. Stork, *Pattern Classification*, Wiley, 2nd ed., 2000.
- Peter Flach, *Machine Learning: The Art and Science of Algorithms that Make Sense of Data*, Cambridge University Press, 2012.

Objectives: This course is primarily designed for graduate students ...

Prerequisites: An undergraduate-level understanding of probability, statistics, graph theory, algorithms, and linear algebra is assumed.

Tentative Course Outline:

■ A little of probability theory and graph theory

Grading Policy: Homework and quizzes (30%), Midterm 1 (20%), Midterm 2 (20%), Final (30%).

Important Dates:

Midterm #1	Ābān 16, 1393
Midterm #2	Āzar 21, 1393
Final Exam	Dey 18, 1393

Course Policy:

- Please sign up for AeLP. I will confirm your enrollment for the course, then you will be able to see the course page.

Class Policy:

- Regular attendance is essential and expected.

Academic Honesty: Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation.