Date: 30.8.2020

Introduction to Statistics 2 - 88761

Type of course : lecture/recitation   **Hours/credits:** 3.0
Academic year: (2019-20) תשפ"א   **Semester:** 1 (Fall)

Course objectives:
- To understand elementary probability and its application to inferential statistics
- To acquire familiarity with the principles of statistical inference
- To learn and apply basic techniques of one- and two- sample statistical inference
- To understand the limitations of statistical inference
- To become a critical consumer of inferential statistics

Overview of the two-semester sequence: Introduction to Statistics is a two-semester sequence (88760-61) covering the material typically taught in a one-semester 4 credit hour introductory statistics course. There is one lecture each week; material is covered at approximately half the rate of a one-semester course.

Course Description: The course is the second semester in a two-semester sequence. We use concepts from descriptive statistics and probability to develop understanding of and appreciation for statistical inference. Topics include confidence intervals, significance tests and inference in one- and two- sample problems.

The Process of the Course:
The course consists of two hours of lecture (including use of statistical software for data analysis and statistical inference) and a one-hour recitation each week.

Detailed topic list:

Topic	Required Reading	Other resources
Introduction to inferential statistics • Inherent error • Introduction to probability • From sampling to inference • Examples from current events	Moore Introduction to Part 3 Chapter12	News articles
Sampling distributions • Central Limit Theorem • Sampling distributions for proportions	Moore 15	Onlinestatbook.com
Confidence intervals • Margin of error • Effects of sample size, population size • Level of confidence • Examples from current events	Moore 16	Onlinestatbook.com News articles
Tests of Significance (known σ) • Case study: Normal distributed data with known variance • Tests for population mean • Hypotheses, test statistic, P-value • Statistical significance • Cautions • Examples from current events	Moore 17,18	Onlinestatbook.com News articles

Inference about one population mean (σ unknown) • The t distribution • One-sample t confidence interval • One-sample t test	Moore 20	Onlinestatbook.com
Comparing two populations means* • Two-sample problems • Conditions • Two-sample t test	Moore 21	Onlinestatbook.com

*if time permits

Course structure:
Pre-requisites: Algebra 2, Introduction to Statistics 1 or permission of the instructor

Requirements and grade components:
- Attendance/participation (10%)
- Homework/attendance (10%)
- Quizzes (20%)
- Final Exam (60%)

Bibliography:
Required Textbook:
- Moore, David S., Wiliam I. Notz and Michael A. Fligner, *The Basic Practice of Statistics, 7th Edition*, Macmillian, 2015

Recommended purchase/rental options:
- **Purchase/rent a printed edition; purchase an electronic edition from Amazon:**
  https://www.amazon.com/Basic-Practice-Statistics-David-Moore/dp/146414253X/ref=sr_1_2?dchild=1&keywords=moore+the+basic+practice+of+statistics&qid=1598778084&sr=8-2
  Renting an electronic edition through Amazon is not recommended.

- **Rent an electronic edition from WebAssign.net:**
  Enter course key: **biu.il 8126 4768**
  If you rented the textbook for the first semester, you do not need to rent it again.