Columbia University
Introduction to Statistics (with Calculus)
Statistics UN1201 section 002
Mathematics 207, T/Th 8:40-9:55am

Instructor: Joyce Robbins
Email: jtr13@columbia.edu
Tel: 212-853-1391

Spring 2017
Office hours: Wed., 12:30-2:00pm
603 Watson Hall: 612 W. 115th St.

Teaching Assistant: David Hirshberg, dah2170@columbia.edu

Course description

This introductory course is designed for students who desire a strong grounding in statistical concepts, and has a greater degree of mathematical rigor than STAT W1111. Topics include: graphical and numerical summaries of data; the normal distribution, probability, random variables, and sampling distributions; estimation and hypothesis testing for means and proportions; comparing two populations; two-way contingency tables; introduction to linear regression. This course serves as the pre-requisite for ECON W3412.

Resources and readings

Required text:

Devore, Jay L. 2016. *Probability and Statistics for Engineering and the Sciences*. 9th edition.
ISBN:9781305251809

Additional materials will be available on CourseWorks.

Grading procedures

Grades will be determined as follows:

20% Homework
20% Test #1
20% Test #2
40% Final

Class policies

Homework: Assignments must be submitted on CourseWorks. Typed or scanned, handwritten assignments are acceptable. Homework is due at 11:59pm on the due date. Late homework will not be accepted. Be sure that homework is clearly labeled and legible. You are encouraged to discuss homework problems with your classmates, but all work submitted must be your own. If multiple students turn in identical solutions, all of them will receive a zero. Due dates are as follows:

Thurs 1/26; Tues 2/7; Thurs 2/16; Thurs 3/2; Tues 3/21; Thurs 3/30; Tues 4/18; & Thurs 4/27

Academic Integrity: Plagiarism or any other breach of academic integrity will not be tolerated and will result in disciplinary action. For more information please refer to the *The Columbia University Undergraduate Guide to Academic Integrity*:

http://www.college.columbia.edu/academics/academicintegrity

Tests: Tests, including the final, are cumulative, with a greater emphasis on newer material. Allowable materials include pens, pencils, erasers, a hand-held calculator, and a single (two-sided) 8.5" x 11" sheet of original handwritten notes for the first two tests, and two sheets (each two-sided) for the final. *Make-up tests will only be administered in cases of documented emergencies.*

Class Schedule:

Week	**D**ate	**Topics**	Textbook
1	Tues 1/17	Graphical summaries of data	1.1-1.2
	Thurs 1/19	Numerical summaries of data	1.3-1.4
2	Tue 1/24	Probability	2.1-2.3, 2.5
	Thurs 1/26 *	Discrete random variables	3.1-3.2
3	Tues 1/31	Expected values	3.3
	Thurs 2/2	Binomial and related distributions	3.4-3.6
4	Tues 2/7 *	Continuous random variables	4.1-4.2
	Thurs 2/9	Normal and other continuous distributions	4.3-4.5
5	Tues 2/14	The sampling distribution of a mean	5.3-5.5
	Thurs 2/16 *	**Review**	
6	Tues 2/21	**Test #1**	
	Thurs 2/23	Point estimation	6.1-6.2
7	Tues 2/28	Confidence intervals	7.1
	Thurs 3/2 *	Confidence intervals for means and proportions	7.2-7.3
8	Tues 3/7	Hypothesis testing	8.1
	Thurs 3/9	Hypothesis tests for means	8.2-8.3
		Spring Break	
9	Tues 3/21 *	Hypothesis tests for proportions	8.4-8.5
	Thurs 3/23	Comparing two means	9.1-9.3
10	Tues 3/28	Comparing two proportions	9.4
	Thurs 3/30 *	**Review**	
11	Tues 4/4	**Test #2**	
	Thurs 4/6	Conditional probability	2.4-2.5
12	Tues 4/11	*no class*	
	Thurs 4/13	Joint probability distribution	5.1-5.2
13	Tues 4/18 *	Inference in two-way tables	14.3
	Thurs 4/20	Correlation	5.2, 12.5
14	Tues 4/25	The simple linear regression model	12.1-12.2
	Thurs 4/27 *	Inference in simple linear regression	12.3-12.4

* = homework due

Optional review session: to be scheduled