

Introductory Statistics

MATH 210-01/-02

Fall 2014

Professor: Todd Swanson

Text: *An Introduction to Statistical Investigations*, Preliminary Edition, by Tintle et al.

Curriculum: We use a nontraditional approach to teaching introductory statistics. While we end up with basically the same outcomes as that of a traditional course, our path getting there is a bit different. A traditional course consists of three sections: descriptive statistics, probability/sampling distributions, and inferential statistics. With more and more statistics being taught in the K-12 curriculum, most of you already have a grasp of descriptive statistics. We will quickly include the descriptive topics that are needed for inference throughout the course, but will not devote the amount of time on these topics as is traditionally done. The second part of a traditional course (probability and sampling distributions) is typically included to help students understand the theory behind inferential statistics. We, however, believe that introducing students to inferential statistics is better done using simulations called *permutation tests* or *randomization* to learn the statistical inference process. Introducing inference this way is more intuitive (and thus more understandable) and allows us to spend **much** more time on it. Therefore, you should, gain a better understanding of the inferential process as we will thoroughly cover the entire statistical investigative method throughout the entire semester. We will still cover the theory-based methods that are traditionally taught including tests and confidence intervals for a single mean and proportion, matched pairs, comparing two means, comparing two proportions, comparing multiple means (ANOVA) and proportions (chi-square), correlation and regression.

Pedagogy: Each chapter in our book contains a number of explorations to complete. After a brief introduction of each concept (typically using the example in the section), an exploration will be assigned in which you will learn or receive reinforcement. You will be involved in tactile learning experiences like shuffling decks of cards and flipping coins to estimate p-values, use applets for simulations, collecting data, and running experiments. You will also complete in-depth projects where you design a study, collect data, use computer software to help interpret the results and present your results in both oral and written form.

Attendance and homework: We will work on many explorations during class. Therefore attending every class and participating in these explorations is extremely important to help you understand the material. Likewise, doing the homework further helps reinforce these concepts and it is important that all those that are assigned are completed. Some of the assignments will be graded and some will not. However, your success in this class is dependent on doing **all** explorations and homework that is assigned.

Grading: A point distribution is as follows:

Tests (2) – 200 points

Final (Comprehensive) – 150 points

Quizzes/Assignments – ≈125 points

Final Project – 75 points

Each graded piece of work will be assigned a specific number of points. The final grade will be determined simply by your percentage of the total points accumulated during the semester according to the following scale: 0-59%=F; 60-62%=D-; 63-66%=D; 67-69%=D+; 70-72%=C-; 73-76%=C; 77-79%=C+; 80-82%=B-; 83-86%=B; 87-89%=B+; 90-92%=A-; 93-100%=A.

Tentative Schedule

	M	T	W	Th	F
S E P T E M B E R	25	26	27 Prelim	28	29 Prelim
	1 Chap 1	2	3 Chap 1	4	5 Chap 1
	8 Chap 1	9	10 Chap 1	11	12 Chap 2
	15 Chap 2	16	17 Chap 3	18	19 Chap 3
	22 Chap 3	23	24 Critical Issues Symposium	25	26 Review
	29 Test 1	30	1 Chap 4	2	3 Chap 4
O C T O B E R	6 FALL BREAK	7 FALL BREAK	8 Chap 5	9	10 Chap 5
	13 Chap 6	14	15 Chap 6	16	17 Chap 6
	20 Chap 7	21	22 Chap 7	23	24 Review
	27 Test 2	28	29 Data Exploration	30	31 Chap 8 <small>Last Day to Withdraw</small>
	3 Chap 8	4	5 Chap 9	6	7 Chap 9
	10 Chap 10	11	12 Project	13	14 Project
N O V E M B E R	17 Project	18	19 Project	20	21 Chap 10
	24 Chap 10	25	26 Data Exploration	27 THANKSGIVING	28 THANKSGIVING
	1 Chap 10	2	3 Chap 10	4	5 Review
	8	9	10	11	12
D E C					