Resource Economics 211:
Introductory Statistics for the Life Sciences

Spring 2012, Professor Gail Adams
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Office Hours: Monday and Friday, 1:00 – 3:00 p.m. or by appointment

Syllabus

"Oh, people can come up with statistics to prove anything. 14% of people know that."

--Homer Simpson

Objectives: This course is designed to help you unlock the secrets of statistics. We will introduce you to the methods used to organize data for meaningful analysis and to provide you with powerful tools for drawing inferences about populations.

Please: The class starts *promptly* at 9:05.

Please arrive on time and quickly find an open seat.

Please do not leave in the middle of class.

Please refrain from side conversations.

Please ask me relevant questions.

Please, please: NO CELL PHONE use, including texting.

Please, please: NO Laptops.

Office Hours: Monday and Friday, 11:00 a.m. – Noon, and by appointment.

Teaching Assistants: Michael Griffin, Rudy Magno, and Josh Slocum are our TAs. Their office hours will be held in Room 215 Stockbridge Hall Monday – Thursday, 6:00 P.M. – 9:00 P.M.

Required Text: ***Elementary Statistics***, Neil A. Weiss, 6th ed., Pearson/Addison Wesley, 2005.

Strongly Recommended: i>clicker 2 Audience Response System Remote. (Please get one. Your learning experience will be greatly enhanced.) Instructions for registering your i>clicker 2 for this class will be on the Res-Econ 11 *MOODLE* site.

Other Requirements:

- Access to Microsoft Excel.®
- Access to a personal computer, a calculator, and the internet.
- Access to the *MOODLE* online classroom management system is very important. Assignments prior to each class, online quizzes, handouts and other class materials will be housed on *MOODLE*.

Opportunities for Success:

- **Be Present.**
- **Participate.**
- **Practice.**
- **Question.**
- **Stay on top of your coursework.**
- **Remember: Discussion sections are mandatory.** Discussion section assignments count toward your grade.
- **Examinations:** 2 mid-semester evening examinations scheduled for February and March. No make-ups. The final exam will be scheduled during the final exam period.
- **Pre-Lecture *MOODLE* Assignments** must be completed before class.
- ***MOODLE* Quizzes:** 9 or 10 timed online quizzes.
- **The Audience Response System (i>Clicker 2) will be used in every lecture, beginning January 30.** One point total per lecture for participation. No points if you're not in class.
- **Grading Scheme:** You may choose a set of weights summing to 100% prior to the final exam. If you do not make a choice, we use the default weights in the last column.

	Possible Weights	***Default Weights***
Pre-Lecture Assignments	5%	5%
i>Clicker 2 Participation	0% or 5%	5%
Moodle Quizzes	10% or15%	10%
First Mid-Semester Exam	10%, 20% or 25%	20%
Second Mid-Semester Exam	10%, 20% or 25%	20%
Final Exam	20%, 25% or 30%	25%
Discussion Assignments	15%	15%
Weights must sum to:	**100%**	**100%**

The *minimum* percentages needed for course grades are as follows:

Percentage	92	90	86	82	78	74	70	66	62	58	<58
Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F

Topics: Chapters 1 – 10 from the text in detail and possibly some selected topics from chapters 11 – 13. Lecture topics, lecture notes and, handouts will be posted on *MOODLE* before each lecture. This list will be revised frequently to reflect what we actually cover in class.

Date	Topic
	I. Introduction
Jan. 23	I. Introduction (Text: Chapter 1, pp. 1-9)
Jan. 25	I. Introduction - Continued (Chapter 1, pp: 10-37)
Jan 27	I. Introduction – Continued (Chapter 1, pp. 22-37)
	II. Descriptive Statistics
Jan. 27	A. Organizing Data (Chapter 2) 1. Variables and Data: (pp. 40-46)
Jan. 30	2. Grouping Data (pp. 46 - 58)
Feb. 1	3. Graphs and Charts (pp. 59 – 72)
Feb. 3	4. Shapes of distributions (pp. 72-81)
Feb. 6	B. Descriptive Measures - More Descriptive Stats. 1. Measures of Center (Chapter 3: Sections 3.1 and 3.2) 2. Variation: (Chapter 3, Section 3.3 and the first part of 3.5)
Feb. 8	2. Variation Continued 3. Intervals: Combining Center and Variation. (Chapter 3, sections 3.3 and 3.5)
Feb. 10	3. Intervals: Combining Center and Variation Continued. 4. 5-Number Summary (Chapter 3, Section 3.4)
Feb. 13	4. 5-Number Summary (Chapter 3, Section 3.4) 5. Descriptive Measures for Populations (Chapter 3, Section 3.5) C. Regression and Correlation (Chapter 4) 1. Introduction - univariate stats vs. bivariate stats. 2. Linear Equations (Chapter 4, pp 150-157)
Feb. 15	C. Regression and Correlation Continued 3. Regression (Chapter 4, Section 4.2, pp. 157-173)
Feb. 17	3. Regression Continued 4. Coefficient of Determination (Chapter 4, pp. 173 -182) 5. Linear Correlation (Chapter 4, pp. 182 – 189)
Feb.	**Mid-Term Exam 1**
Feb. 20	Presidents' Day Holiday – No Class!
	III. Probability, Random Variables, Normal Distribution and Sampling Distribution.
Feb. 22	A. Probability (Chapter 5). 1. Basic Probability Concepts (pp. 202-217)
Feb. 24	1. Basic Probability Concepts Continued. 2. Rules of Probability (pp. 217 – 224)
Feb. 26	2. Rules of Probability Continued.
Feb. 29	B. Random Variables (Chapter 5: 5.4 and 5.5) 1. Discrete Random Variables (pp. 224 – 238)
March 2	B. Random Variables Continued (Chapter 5: 5.4 and 5.5) 1. Discrete Random Variables Continued (pp. 224 – 238)

March 5	2. Binomial Discrete Random Variables (Chapter 5, Section 5.6, pp. 238-253)
March 7	2. Binomial Discrete Random Variables Continued (Chapter 5, Section 5.6) C. Continuous Random Variables: The Normal Distribution. (Chapter 6) 1. Introduction to the Normal Distribution (pp. 265 -265).
March 9	C. Continuous Random Variables: The Normal Distribution (Chapter 6) 1. Normally Distributed Variables (pp. 266 - 269. 2. The Standard Normal Distribution (pp 269 - 273).
March 12	C. Continuous Random Variables: The Normal Distribution. (Chapter 6) 3. Areas Under the Standard Normal Curve (pp. 274 – 291)
March 14	C. Continuous Random Variables: The Normal Distribution. (Chapter 6) 3. The Standard Normal Distribution Continued
March 16	D. Sampling Distribution for the Sample Mean (Chapter 7) 1. Sampling Error - difference between estimate and true population parameter value (pp.306 – 313).
March 26	2. Mean and Standard Deviation of the Sample Mean (pp. 313 – 320)
March 28	3. Sampling Distribution for the Sample Mean (pp. 320 – 325)
IV. Inference	
March 30	A. Confidence Intervals for Population Mean (Chapter 8) 1. Estimating a Population Mean (pp. 338 – 344)
March	Mid-Term Exam 2
April 2	2. Confidence Intervals for Population Mean – σ known (pp. 344 – 353)
April 4	3. Margin of Error and Sample Size (pp. 353 – 359) 4. Confidence Intervals for Population Mean σ unknown (pp. 359 – 367)
April 6	B. Hypothesis Tests for Population Mean (Chapter 9) 1. Basics of Hypothesis Tests (pp. 380 – 387) 2. Terms, Errors, Conclusions. (pp. 387 – 397)
April 9	3. Hypothesis Tests (pp. 396 – 407)
April 13	Monday Class Schedule Followed 4. P-Values. (pp 407 – 432).
Tuesday, April 17	C. Inference for Two Population Means (Chapter 10: Sections 10.1 and 10.3) 1. Hypothesis for the Difference between two Population Means (pp. 442 – 447) 2. Hypothesis test for two population means.
April 18	D. Inference for Proportions (Chapter 11) 1. Sampling Distribution for Sample Proportion. 2. Confidence Intervals for Population Proportion.
April 20	3. Hypothesis Tests for Population Proportion. 4. Two Sample Tests of Population Proportions.
April 23	E. Analysis of Variance (Chapter 13)
April 25	Analysis of Variance Continued
April 27	Review
April 30	Review. Last Class!