

## Syllabus: Stat 200 Elementary Statistics - Spring 2006

Sections 10 (593893), 11 (593899), and 12 (593896)

### CONTACT INFORMATION

**Instructor:** Dr. Shabnam Mousavi

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**Office Hours:** Tuesday, Wednesday, Thursday, and Friday 10:00-11:00am  
and also by appointment

### Teaching Assistants:

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*TA Office Hours:* TBA

### COURSE DESCRIPTION

Statistics is the art and science of using sample data to make generalizations about populations. The topics covered in this course include:

- methods for collecting and summarizing data
- methods for evaluating the accuracy of sample estimates
- techniques for making statistical inferences

Users of statistics -- researchers, government agencies like the Census Bureau and the Bureau of Labor Statistics, companies like the automakers and drug industry, etc. -- make extensive use of the computer in applying statistical methods to their problems. So will you! You will have plenty of practice in analyzing data from a variety of areas and should be well prepared for problem-solving involving statistics in the rest of your college courses, as well as gaining an understanding of the role of statistics in your daily life.

### COURSE WEB SITE and EMAIL

A course website will be maintained on [ANGEL](#) will contain all course materials. *You are expected to access the site regularly and to use the system for ALL EMAIL TO / FROM INSTRUCTOR AND TA.* You can access the email functions by logging into ANGEL, selecting the proper course title under My Courses, then clicking the tab titled IN TOUCH. The new window will provide various options under Course Mail. If you are not familiar with ANGEL, please view "[The Quick Start Guide for Students](#)"

### REQUIRED RESOURCES

1. A textbook, **Mind on Statistics**, 2<sup>nd</sup> Edition, by Utts and Heckard. It can be purchased at the usual bookstores.
2. A simple calculator (cell phones prohibited) that can compute square roots.

## COURSE FORMAT

- Lectures will be given Wednesdays, 1:25 – 2:15 in 101 Thomas. The lectures will give an overview of the material that will be implemented in the labs, and will include problem-solving help.
- Lab meetings will be held on Mondays and Fridays in 111 Boucke(Section 11) and 214 Boucke (Sections 10 and 12). During lab meetings you usually will do activities that will help you master the reading and lecture material for that week, plus be given time to work on homework assignments and take scheduled quizzes.
- **You must attend the lab and section meetings for which you are registered. If you attend an off-section you will not have access to the lab quizzes nor will your exam/section quiz be recorded.**

## SUMMARY OF COURSE REQUIREMENTS

What?	When/How often?	Points	Percent
1. Quizzes	6 quizzes, TBA Lowest score dropped	150	15%
2. Group Project	TBA	110	11%
3. Homework and Lab Activities	9 HWs, Most weeks Lowest score dropped 11 activities, Most weeks Lowest score dropped	96 120	9.6% 12%
4. Midterm Exam 1	February 8	124	12.4%
Midterm Exam 2	March 22	150	15%
Final Exam	Date TBA	250	25%
	<b>Total</b>	<b>1000</b>	<b>100%</b>

## SOME DETAILS ABOUT COURSE REQUIREMENTS

### 1. Quizzes

It is anticipated that there will be 6 quizzes. Lowest overall quiz score will be dropped.

**RULES:** Missed quizzes cannot be made up. Early quizzes may be given to those required to miss class due to official University activities.

### 2. Group Project

Some section meetings in the course will be devoted to group project work involving the integration of course content, such as analyzing and interpreting survey data, and interpreting the results of research reports. One report will be submitted per group.

**RULES:** Late group projects will be penalized. Students not able to participate with a group due to illness or official University activities must still do the project as an individual, and in those instances a make-up grace period will be given.

### 3. Homework and Lab Activities

It is anticipated that there will be 9 homework assignments to be handed in throughout the semester. These will be due during the lab meetings on Friday. Homework will consist of exercises from the textbook. The lab activities will consist of a multiple choice quiz given at the lab. These will be delivered in ANGEL and will involve answering questions based on results produced in Minitab. Each homework/lab activity will be graded on a 12-point basis. For each item, the lowest score will be dropped and

the rest of scores will count toward your final homework / lab activity grade.

**RULES:** For the following reasons no late homework or make-up of lab activities will be accepted for grading:

- Lowest score(s) will be dropped.
- Some time during the lab meetings will be devoted to the homework assignments.

#### **4. Midterm Exams and Final**

Two midterms, and one final exam will be given. The exams will have multiple-choice and sections. The first midterm is tentatively set for 2/8 and the second on 3/22. The final exam will be scheduled by the university or will be the last day of classes. In-class review will be provided for all exams.

**RULES:** Make-ups will be given, but reasons for missing an exam must be documented, and you must tell me by e-mail on or before the day of the exam that you will need a make-up. The final exam can be rescheduled through the University only if a conflict is present.

#### **Academic Integrity**

Academic integrity, which is the pursuit of scholarly activity free from fraud and deception, is an educational expectation at Penn State. This course will follow the guidelines found in Section 49-20 of the University Faculty Senate Policies for Students. See <http://www.science.psu.edu/academic/Integrity/index.html> concerning academic integrity for details.

#### **COURSE GOALS**

At the end of this course, you should be able to:

1. Understand the reasoning by which findings from sample data can be extended to larger, more general populations.
2. Critically evaluate the results of scientific studies.
3. Design, conduct, and analyze a scientific research study.
4. Read statistical summaries.
5. Analyze data using statistical software (Minitab).
6. Study and understand examples and applications from a variety of fields.
7. Learn independently and work cooperatively.

#### **COURSE RULES**

1. SEE RULES GIVEN UNDER THE DESCRIPTIONS OF EACH CATEGORY OF COURSE REQUIREMENTS.
2. Students are responsible for all announcements and supplements given within any lecture or lab, as well as those not announced but posted on the course website calendar.
3. Cheating will be punished in accordance with University guidelines.

## COURSE GRADES

You will be graded based on the total score obtained from all of your course work. Course grades in each of the nine categories will be awarded based on the following bounds:

Final Grade	Points	Percent
A	930	93
A-	900	90
B+	870	87
B	830	83
B-	800	80
C+	770	77
C	700	70
D	600	60
F	below 600	below 60

The lower bounds may be lowered if the course work is judged to be different than in previous semesters. This judgment will be made in consultation with the other Stat 200 instructors after all of the course work is graded. (Usually, there is only a small change to these borderlines!)

## IMPORTANT COURSE ADMINISTRATION DATES

Please note that as a student registered for this course, you are responsible for taking care of certain administrative details *before* the following university-wide deadlines:

Drop/Add Period	1/9-1/18
Martin Luther King Day – No Classes	1/16
Late Registration and Late Drop Begin	1/19
Final Exam Conflict - Filing Period	2/13-2/26
Spring Break – No Classes	3/6-3/10
Late Drop Deadline	4/7
Withdrawal Deadline – Classes End	4/28
Study Days	4/29-4/30
Final Exams	5/1-5/5
Commencement	5/12-5/14

**This syllabus contains a tentative plan. All items are subject to change. The changes will be announced in the class and posted on Angel.**

**Statistics 200, Pennsylvania State University, University Park Campus**  
**Course Coverage**

**1. Descriptive Statistics for Categorical Variables**

Frequency and relative frequency distributions, two-way tables, graphical displays

**2. Descriptive Statistics for One Quantitative Variable**

Histograms, boxplots, stemplots, mean, median, standard deviation, variance, 5-number summaries

**3. Descriptive Statistics for Two Quantitative Variables**

Scatterplots, simple regression, correlation

**4. Probability and Probability Distributions**

Basic probability definitions, discrete and continuous random variables, binomial distribution, normal distribution

**5. Sampling Distributions**

Statistics, parameters, concept of a sampling distribution, sampling distribution of a sample mean, sampling distribution of sample proportion, Central Limit Theorem

**6. Confidence Intervals**

Interpretation and purpose of confidence interval and confidence level, confidence intervals for a proportion, for a mean or for mean difference with paired data, for difference in two means, for difference in two proportions

**7. Hypothesis Tests**

Null and alternative hypotheses, p-values, type 1 and 2 errors, statistical power, effect of sample size on significance, rejection regions. Hypothesis tests about a proportion, about a mean or mean difference with paired data (t-test and paired t-test), about difference in two means (two-sample t-test), hypothesis test about difference in two proportions

**8. Inference for Regression and Correlation**

Hypothesis tests for slope of straight line and for correlation, prediction intervals.

**9. Inference for Two-Way Tables**

Chi-square test for two-way tables

**10. One-Way Analysis of Variance**

F-test for comparing several means

**11. Methods for Collecting Data in Sample Surveys and Experiments**

Simple random sampling, stratified sampling, cluster sampling, systematic sampling, random digit dialing, randomization, matched pairs, blocking, confounding issues

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593899	011	80	0		W 01:25P - 02:15P M F 01:25P - 02:15P	101 <a href="#">THOMAS</a> 111 <a href="#">BOUCKE</a>	MODARRES-MOUSAVI, SKINNER, JEFFERY R
593896	012	80	0		W 01:25P - 02:15P M F 02:30P - 03:20P	101 <a href="#">THOMAS</a> 214 <a href="#">BOUCKE</a>	MODARRES-MOUSAVI, SKINNER, JEFFERY R