STAT 200 Elementary Statistics
Sections 24 and 25
August 24, 2009 – December 18, 2009

Class:	10:10 – 11:00 PM	TR	358 Willard
	1:25 – 2:15 PM	WF	111 Boucke (section 24)
	2:30-3:20 PM	WF	004 Life Science (section 25)

Instructor:	Tracey Wrobel Hammel	**TA:**	Kuang-Yao Lee
Office	333 Thomas	Office	418 Thomas
Office Hours	11:30-12:30 TR	Office Hours	M : 1-2, W: 3:30-4:30
Office Phone	865-3374	Office Phone	814-865-3230

REQUIRED RESOURCES

1. A textbook, Mind on Statistics, 3nd 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.

PREQUISTS:

1. Completion of two years of high school algebra
2. Logic Skills

Email:

All email communications need to be through ANGEL. Please do not email the instructor or the TA's PSU account as they may be ignored.

COURSE DESCRIPTION

Statistics is the art and science of using sample data to make generalizations about populations. As an example of the type of problem we consider, suppose that we wish to learn what percentage of all students at Penn State has missed a class due to a hangover or other alcohol related difficulties. If we do a survey, how should we pick the students who will be in the survey? How do we decide what number of students to survey? As a second example, suppose that we want to see if two different memorization methods produced different results. How should we assign memorization methods to participants in the study? How many people should we test to get an accurate measure of whether there's a difference? If we have data from samples, how large should a sample difference be in order for us to say one method is better?

The main points of emphasis in the course include:

- methods for collecting and summarizing sample data
- methods for evaluating the accuracy of estimates of unknown population values
- techniques for using sample data to make generalizations about larger populations

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

- Understand the reasoning by which findings from sample data can be extended to larger, more general populations.
- Understand how to evaluate the results of research studies in which statistical analyses are done.

- Understand data collection issues
- Analyze data using statistical software (Minitab).
- Understand statistical examples and applications from a variety of fields.

ACEDEMIC INTERGRITY

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 concerning academic integrity for details.

EVALUATION:

	Percent
Midterm	20%
Final	25%
RAQs (drop lowest)	25%
Homework (drop lowest)	10%
Lab Activity Quizzes (drop lowest)	10%
Project	10%
Total	100%

The Readiness Assessment Quizzes (RAQs): Quiz dates are provided on the Course Calendar (in ANGEL). Questions will pertain to material covered during class, any pertinent text sections, and homework problems. These quizzes will be multiple-choice.

The homework will consist of problems selected from the textbook and will be collected at the ***beginning*** of the class period on the assigned due date. The dates for the homework assignments are found on the Course Calendar. The events on the calendar have tentative dates and are subject to change. The HW will be graded based on my "100/0" policy. If you attempt each problem (including all subparts of each problem), provide evidence of statistical thought, and show all of your work, you will receive a 100%. If you do not, you will receive a 0%. Your name and section number is also a part of a complete homework assignment. Those without a name and/or correct section number provided will receive a 0.

The lab activity quizzes are primarily designed to "grade" your solutions to the lab activities, providing prompt feedback to aid you in preparation for the RAQs and exams.

The final will be comprehensive.

A graphic calculator is not allowed on the exams or quizzes. You may use them for labs and homework.

Although attendance is not taken, you are expected to come to every class. You are responsible for any announcements, etc that are mentioned in class. You should also check ANGEL on a regular basis, as you are responsible for any announcements, emails, etc.

I reserve the right to give RAQs that are not posted on the schedule (i.e "pop-quizzes"). These will occur if/when class conduct becomes disruptive, attendance is poor, and/or class participation declines.

The project descriptions will be given out after Thanksgiving break. You will be able to work in groups of three or four. Every group member is responsible for the entire project. Please choose groups wisely. Late projects will not be accepted.

You are responsible for your grade. Many students need to obtain certain grades for various reasons: scholarships, athletics, financial aid, graduation, etc. My job is to give you the grade you earn; it may not always be the grade you think you deserve. Grades are given objectively based on calculations with the above breakdown. Here is how you calculate your final grade:

Grade=0.10*(HW)+0.10*(Lab)+0.25*(RAQ)+0.20*(Midterm)+0.25*(Final)+0.10*(Project)

If you would like to calculate your grade without the final, here is how to do it:

Grade=[0.10*(HW)+0.10*(Lab)+0.25*(RAQ)+0.20*(Midterm)+0.10*(Project)]/0.75

With the above formula and with the grades posted on ANGEL, there should be no surprise when you see your final grade for this course and the grade you receive is fixed (with the exception of typos). For example, if you receive an F as your final grade and you are graduating, I will not change the grade to a D, and therefore you most likely will not graduate.

MAKEUP POLICY:

- Homework assignments and lab quizzes will ***not*** be accepted past the time they are due—***no exceptions!***
- If you must miss the Midterm or Final for a university-related function or an event of an "emergency" nature, speak to me ***BEFORE*** the date of the exam in order to set up a conflict exam time. Otherwise you will receive a zero for the missed exam. If you do not have access to email, call the statistics department office at 865-1348 (8am – 5pm) and leave a message with Jennifer Parkes. You will be asked to provide documentation evidencing the reason for you absence.
- Do not plan to leave early for Thanksgiving break and/or Winter Break. The final exam will not be given early. It is possible that the final exam could be set for the last day of classes (Friday December 18th). Plan on staying the entire week of finals. The final will ***NOT*** be given early except with emergency situations. You have 24 hours from the first day of classes to contact be regarding previous purchased travel plans to make arrangements to make up assignments before you leave (you must provide proof). If you do not notify me, you will be expected to take the exams or turn in assignments on their set dates and times.
- You ***will not*** be able to negotiate missed exams, quizzes, or homework at the end of the semester.
- Deferred grades will only be considered for legitimate extenuating circumstances that occur near the end of the semester.

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	Percent
A	93
A-	90
B+	87
B	83
B-	80
C+	76
C	68
D	58
F	below 58

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 minor made change to these borderlines! Don't expect a curve. It probably won't happen.)

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:

Normal Drop/Add Period	Ends September 2nd
Labor Day – No Classes	Monday September 7th
Late Drop Deadline	Friday November 13th
Thanksgiving Holiday	November 23rd -29th
Classes End	Friday December 11th
Final Exams	December 14th-18th

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

5. 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

6. 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

7. Inference for Regression and Correlation
Hypothesis tests for slope of straight line and for correlation, prediction intervals.

8. One-Way Analysis of Variance
F-test for comparing several means