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## STATISTICS 200: SECTIONS 9-12 ELEMENTARY STATISTICS: FALL SEMESTER 2007

**COURSE DESCRIPTION:** Welcome to Stat 200. In today's world, we are seeing a major trend throughout industry and government where decisions are data-driven. Statistics is a discipline dedicated to unraveling the mystery of making such decisions in the face of uncertainty. More specifically, statistics is the art and science of using sample data to make generalizations about populations. The objective of this course is to explore and apply basic statistical concepts and procedures that are used when analyzing data. Course topics covered include methods for:

- collecting and summarizing sample data
- evaluating the accuracy of estimates obtained from sample data
- making statistical inferences about populations

What you should discover is that statistics is not just another math course. While you will be exposed to new terminology and concepts, much of the time you will use statistical software to solve problems that require quantitative solutions. Basic algebra is the only prerequisites. Best wishes for much success in this course.

**INSTRUCTOR:**

- **Name & Office Location:** Patricia (Pat) Buchanan at 309 Thomas
- **Office Hours:** see availability schedule on course web site
- **Phone:** (814)-865-6266
- **Email:** *must always* use the “Send Course Mail” option inside **Angel** under “Communicate”

**TABLE 1: ROOMS & TIMES**

Section	Lecture (Wed)	Computer Labs (Mon & Fri)
Section 9	111 Forum 9:05 AM	214 Boucke: 8:00 AM
Section 10	111 Forum 9:05 AM	214 Boucke: 9:05 AM
Section 11	111 Forum 9:05 AM	214 Boucke: 10:10 AM
Section 12	111 Forum 9:05 AM	214 Boucke: 11:15 AM

**COURSE FORMAT:**

- **Overview Lectures (Wed at 9:05 in 111 Forum)**
  1. **PowerPoint slides** will be posted in advance – bring a copy to lecture
  2. Presented information will be applied in labs, quizzes, exams, homework, and projects
  3. On-line game will be posted to take after the lecture
- **Computer Labs (Mon & Fri in 214 Boucke at Scheduled Times)**
  1. Complete “lab activities” in small groups based on lectures & readings
  2. Lab Activities will include both data analysis & concept illustration often requiring the use of the statistical software package: Minitab
  3. **Be prepared to learn** - bring your textbook, calculator, & Wed notes
  4. **Lab Activity Quizzes** will be taken at the end of each lab
  5. Some labs will be reserved for completing group projects & taking exams/quizzes

**REQUIRED MATERIALS: (Copy of Textbook found on Reserve in Pattee)**

1. Printed textbook: **Mind on Statistics, 3<sup>rd</sup> Edition**, by Utts and Heckard, ISBN: 0495112070
2. Available on web at: <http://pennstatestat.ichaptersites.com>
3. Calculator (to complete homework assignments & lab activity calculations)

**TEACHING ASSISTANTS: (name, office location, & office hours posted on the course web site).**

The TA's will:

- oversee the Mon computer labs
- handle all grade-related issues including UTS reports/scantron problems and calculations
- handle all issues surrounding projects & homework: submissions, grading, & returns
- handle approved make-up exams and quizzes when following course guide lines

## GENERAL TOPICS COVERED IN STAT 200

- Overview of Statistics, Population, & Sample
- Basics of Experimental Design
- Binomial Distributions, Normal Distributions, & Sampling Distributions
- Descriptive And Inferential Methods for:
  1. One Quantitative Response Variable (One, Two, and More Than Two Samples)
  2. One Categorical Response Variable (One, Two, and More Than Two Samples)
  3. Two Different Quantitative Variables & Two Different Categorical Variables

**TABLE 2: COVERED CHAPTERS & CORRESPONDING TOPICS**

Chapters	Topics
Chapter 1 (all sections)	Overview of Statistics, Population, Sample
Chapter 2 (all sections)	Descriptive Methods: one quantitative and one categorical variable
Chapter 3 Sections 3.2	Margin of error & corresponding confidence interval
Chapter 4 Sections 4.1-4.3	Experimental Design
Chapter 5 (all sections)	Descriptive Methods: regression & correlation
Chapter 6: Sections 6.1, 6.2, & 6.4	Chi-square Procedure: 2X2 tables
Chapter 8: Sections 8.1-8.4, 8.6	Random variables, binomial distribution, normal distribution
Chapter 9: Sections 9.1, 9.2, 9.6, 9.9	Sampling Distributions
Chapter 10: (all sections)	Confidence Intervals: Population Proportion(s)
Chapter 11: Sections 11.1 – 11.4	Confidence Intervals: Population Mean(s)
Chapter 12: Sections 12.1 – 12.4	Hypothesis Tests: Population Proportion(s)
Chapter 13: Sections 13.1 – 13.5	Hypotheses Tests: Population Mean(s)
Chapter 14: Pages 612-613	Hypothesis test: Population Correlation (link to Slope test)
Chapter 15: Sections 15.1 & 15.2	Chi-square Procedures: other than 2X2 tables
Chapter 16: Sections 16.1 & 16.2	One-Way Analysis of Variance

**COURSE WEB SITE (ANGEL):** <https://cms.psu.edu>: On the **Angel** web site, you will find posted:

- course syllabus & course calendar
- solutions to assigned homework problems, exams, & quizzes
- weekly agenda's (including assigned homework)
- study guides for exams & quizzes (posted at least one week in advance)
- power point slides (bring to class on Wed)
- announcements & email correspondence
- (Instructor & TA) information & availability
- lab activities & lab activity quizzes: available at a later time for review
- grades in Angel grade book

**COURSE AGREEMENT:** This syllabus serves as an agreement that begins on the first day of class & ends upon completion of the scheduled final. With this course, you are responsible for:

- anything discussed in class & posted on the **ANGEL** website
- sending & replying to all course email by using the "**Send Course Mail**" option inside **Angel** under "**Communicate** (check email daily during the week)
- taking all exams and quizzes during the scheduled time.
- coming to the class prepared to learn & finding enough time to make the appropriate commitment
- seeking appropriate & timely help if having problems
- accepting the limited make-up policy
- accepting that final grades will **not** be changed for purposes of maintaining financial aid and/or academic progress. (also grades will **not** be curved)
- accepting that grades will be based on mastery of material (not just on attendance)
- accepting that individual extra credit will not be allowed
- knowing your PSU ID number for all scantron procedures (bring Student ID when required)
- calculating your grade based on information found in the Angel Grade book (note your grades will appear as a "zero" in the Angel Grade Book until a grade is achieved)

**Penn State Principles: Should follow while at Penn State**

- I will respect the dignity of all individuals within the Penn State Community
- I will practice academic integrity
- I will demonstrate social and personal responsibility
- I will be responsible for my own academic progress and agree to comply with all University policies

### **ACADEMIC INTEGRITY:**

- Academic integrity includes a commitment to not engage in or tolerate acts of falsification, misrepresentation or deception.
- Such acts of dishonesty violate the fundamental ethical principles of the Penn State community and compromise the worth of work completed by others.
- This course will follow the guidelines found under Academic Integrity (Section 49-20) of the University Faculty Senate Policies for Students.

### **THE PENN STATE HONOR CODE:**

"A good name is earned by fair play, square dealing and good sportsmanship in the classroom, on the athletic field and in all other college relations. We earnestly desire that this spirit may become a tradition at Penn State."

**DISABILITY POLICY:** It is Penn State's policy to not discriminate against qualified students with documented disabilities in its educational programs. If you have a disability-related need for modifications in the course, contact both the instructor and the Office for Disability Services (116 Boucke) at the beginning of the semester.

### **COURSE REQUIREMENTS**

#### **Individual Quizzes & Group Quizzes:**

- **Individual Quiz (IQ)** will consist of 14-16 multiple choice questions
- **Group Quiz (GQ)** will be on the same set of questions & taken with a group of about 3-4 students after the individual quiz is submitted
- Quizzes will cover topics presented in: 1) lecture, 2) lab, 3) homework, & 4) assigned readings.
- **Refer to limited make-up policy**

#### **Exams and Final:**

- **Exams (including Final):** will be multiple choice with study guides posted in advance
- **Do not** make plans to leave campus prior to Exam 2 and the scheduled final that will be given during final's week
- **Refer to limited make-up policy**

#### **Group Projects (Groups of 3 to 4 people):**

- **Project 1:** complete during the middle of the semester
- **Project 2:** complete last two weeks of the semester (capstone experience)
- **Need** to both follow instructions and be statistically accurate to achieve points
- **Need to be accountable for contribution to project** (other group members can refuse to put your name on a project if you don't sufficiently contribute)

#### **Homework:**

- TA handle all homework issues
- A total of 8 assignments will be given though out the semester (best 6 will count)
- **Late homework's will not be accepted** under any circumstances
- Due on Mon at the beginning of lab (TA's will collect & return)
- Must follow directions for full credit

#### **Lab Activity Quizzes (LAQ):**

- taken inside Angel)
- 17 quizzes will be given throughout the semester (lowest 3 will be dropped)
- must take in 214 Boucke during scheduled lab times
- lab activity scores that come from computers outside 214 Boucke will changed to "0"
- **No make-ups given under any circumstances** because automated & have drops
- Consist of about 16-22 questions based on concepts covered in lectures and activities

#### **Lecture Games (LG):**

- will be posted after the lecture is given on Wed (have until 4:00 AM on Thurs to complete)
- complete cross puzzle based on a key topics discussed in lecture on Angel
- keep best 8 out of 11
- **No make-ups given under any circumstances** because automated & have drops

**TABLE 3: IMPORTANT DATES**

Course Requirement	Dates
Exams	Mon Oct 15 & Fri Nov 16 (don't make plans to leave early)
Final Exam (During Final's Week)	TBA on Elion by Oct 1 (don't make plans to leave early)
Individual & Group Quizzes	Mon Sept 17, Mon Oct 1, Mon Oct 29, Mon Nov 12
Project 1	Fri Oct 19 (start)
Project 2 (Capstone Experience)	Fri Dec 7(start)

**TABLE 4: SUMMARY OF COURSE REQUIREMENTS**

Requirement	Pts/Effort	Overall Pts	Overall Percent (%)
Exam 1 (Ex1)	105	105	10.5%
Exam 2 (Ex2)	105	105	10.5%
Final Exam (Final) - selectively comprehensive	130	130	13.0%
Project 1 (Prj1)	60	60	6.0%
Project 2 (Prj2)	90	90	9.0%
Individual Quizzes (IQ) - keep best 3 of 4	50	150	15.0%
Group Quizzes (GQ) - keep best 3 of 4	20	60	6.0%
Lab Activity Quizzes (LAQ) - keep best 14 out of 17 - no make-ups so don't ask	10	140	14.0%
Homework (HW) keep best 6 out of 8 – no make-ups so don't ask	20	120	12.0%
Lecture Games (LG) - keep best 8 out of 11 – no make-ups so don't ask	5	40	4.0%
<b>Total</b>		<b>1000</b>	<b>100%</b>

**FINAL GRADES:** Final grades will be based on 1000 possible points. Point ranges for final grades are found in Table 5. Do not expect the grades to be curved. Grades will be posted in the Angel Grade Book.

**MAKE-UP POLICY:** In general make-ups will not be given. Specifically:

- **TA's will handle all make-ups for exams & individual quizzes.** Please contact assigned the TA well in advance.
- **Lab Activity Quizzes & Lecture Games: no make-ups under any circumstance** because drops are in place & the quizzes are automated
- **Individual & Group Quizzes:** If you have University-related excuse or religious conflict, you must provide appropriate documentation prior to the quiz. Arrangements will be made at that time. Other circumstances will not be considered because of one being dropped. **Late-Make-ups will not be given under any circumstance.**
- **Exams:** If you have University-related excuse or religious conflict, you must provide appropriate documentation prior to the exam. Arrangements will be made at this time. If you are legitimately sick or have a family emergency, you will have to use the percent that you receive on the final as a replacement for the missed exam. (However, this can option can only be used with one Exam.) **Late exams will not be given under any circumstance.**

**TABLE 5: POINT RANGES FOR FINAL GRADES**

Final Grade	Point Totals	Percents
A	(920-1000+) points	(92.0 to 100+)%
A-	(895-919) points	(89.5 to 91.9)%
B+	(865-894) points	(86.5 to 89.4)%
B	(815-864) points	(81.5 to 86.4)%
B-	(795-814) points	(79.5 to 81.4)%
C+	(750-794) points	(75.0 to 79.4)%
C	(695-749) points	(69.5 to 74.9)%
D	(590-694) points	(59.0 to 69.4)%
F	< 590 points	< (59)%