K300 STATISTICAL TECHNIQUES
Class Number 15156, Spring 2009

Class time: MW 6:30 - 8:30PM	**Classroom: PY 109**
Instructor: Tatyana B. Ruseva	**Mailbox:** SPEA 341
E-mail: truseva@indiana.edu	**Office hours:** By appointment
Phone: 855-2863	**Secretary:** Jennifer Mitchner
Teaching Assistant: Hyesong Ha	**E-mail:** hyeha@indiana.edu
Office hours: Monday 1:30-3:00 pm	**Room:** SPEA 440-A

Course Description

This course provides an introduction to statistical concepts and techniques. As college students you need to obtain basic knowledge of statistics to comprehend articles and books that use statistical techniques to present their arguments and ideas. In the practical world, solid skills in the construction, presentation, and interpretation of statistical information can help you make effective decisions. The course will cover essential topics related to data collection and presentation, probability, probability distributions, hypothesis testing, correlation, and regression.

Course Objectives

In the natural and social sciences, as well as in daily life, intelligent decisions are often based on statistical data. Politicians justify their policy choices, advertisers market their products, insurance sales people promote assurance – all based on statistical probabilities. The basic objective of this course is to provide you with the ability to effectively use and interpret statistical data. While a majority of the class will be devoted to lecture, your participation is crucial and highly encouraged. The material covered in this class is cumulative in nature. *Be aware that neglecting one section of the course will negatively impact your ability to handle subsequent material.* The course requires substantial effort and discipline in the form of attendance, reading, homework, team collaboration, and participation. All of the assigned readings are to be completed before class.

Required Materials:

1. **Bluman, Allan G. 2001. Elementary Statistics: A Step by Step Approach, A Brief Version, 4th ed., McGraw-Hill, Boston: MA.**

2. A scientific calculator. Any of the standard scientific calculators that can be purchased for $15-20 should be sufficient for this purpose.

Prerequisite for this class is M014 or equivalent (M118). The course requires that you have a working knowledge of high school algebra. Students should be familiar with Microsoft Excel and Word processing.

<u>NOTE:</u> This syllabus, problem sets, and othercourse-related material will be posted on Oncourse. It is imperative that you check Oncourse on a regular basis for information regarding this course.

Class Schedule for K300 Statistical Techniques
This schedule is tentative. Any changes will be announced in class and on Oncourse.

Week 1		**Assignment**
M 3/9	**Data collection, organization and description** Readings: Ch.1 pp:1-18, 24-25 Readings: Ch.2 pp: 1-10, 16-25	
W 3/11	**Data Description: Measures of** **Central Tendency, Variation, and Position** Readings: Ch.2 (cont'd), pp: 31-41, 54-55, 61 Readings: Ch.3 pp: 1-15, 21-34, 39-50, 67	**Problem Set 1** Due on 3/12 by 5 PM
Week 2		
M 03/23	**Probability and Counting Rules** Readings: Ch.4 pp:1-15,19-22, 29-37, 42-50, 53-58	
W 03/25	**Discrete Probability Distributions** Readings: Ch. 5 pp: 1-15, 20-27	**Exam 1**
Week 3		
M 03/30	**The Normal Distribution** Readings: Ch. 6 pp: 1-17, 23-32	
W 04/01	**Applications of the Normal Distribution & The Central Limit** **Theorem** Readings: Ch. 6, pp: 38-44, 47-54	**Problem Set 2** Due 04/01 in class
Week 4		
M 04/06	**Confidence Intervals: Means, Proportions, and Variances** Readings: Ch. 7 pp: 1-11, 16-19, 23-27, 31-38	
W 04/08	**Hypothesis Testing: Basic Concepts, Small Sample t- and z- tests** Readings: Ch. 8 pp: 1-24, 29-35	**Problem Set 3** Due 04/08 in class
Week 5		
M 04/13	**Hypothesis Testing: chi-square test, confidence intervals** Readings: Ch. 8 pp: 39-43, 47-55	
W 04/15	**More on Hypothesis Testing & Exam 2** Readings: Ch. 8 pp: 59-62	**Exam 2**
Week 6		
M 04/20	**Testing Differences: Means and Variances** Readings: Ch. 9 pp: 1-8, 15-20, 25-30,	
W 04/22	**Testing Differences: Means and Proportions** Readings: Ch. 9 pp: 35-43, 47-51, 55	**Problem Set 4** Due 04/23 by 5PM
Week 7		
M 04/27	**Correlation and Regression** Readings: Ch. 10 pp: 1-1, 15-20, 28-36	
W 04/29	Class catch-up/wrap-up and Review	
Week 8		
M, 05/04	**Final Exam:** 7:15-9:15 p.m., PY 109	**Final Exam**

Grading Scale (rounded to the nearest number):

97 -100 = A+	93 - 96.9 = A	90 - 92.9 = A-	87 - 89.9 = B+
83 - 86.9 = B	80 - 82.9 = B-	77 - 79.9 = C+	73 - 76.9 = C
70 - 72.9 = C-	67 - 69.9 = D+	63 - 66.9 = D	60 - 62.9 = D-
59.9 or below = F			

Your final course grade will be the weighted mean of all grades received on the following four components: problem sets, midterm exams, participation and final exam.

Problem Sets (4)	40 %	(each 10%)
Exam 1	15 %	
Exam 2	15 %	
Final Exam	20 %	
Participation & Attendance	10 %	(5 quizzes × 2 pts)
Total	100 % points	

Teaching Assistant

The teaching assistant for this class is Hyesong Ha (hyeha@indiana.edu). His office hours are Mondays 1:30 - 3:30 PM, in SPEA Room 440-A. There will be 2 review sessions led by Hyesong (Song) before the two exams. The details are below:

MEETING	DATE	DATE	TIME	LOCATION
Exam 1 Review Session	03/24/2009	Tuesday	7:00- 9:00 PM	WH 003
Exam 2 Review Session	04/14/2009	Tuesday	7:00 -9:00 PM	WH 003

Problem Sets

Students will work on problem sets in groups of 4. Each group will turn a single copy of the problem set with the names of the team members on it. Working in groups will help students communicate, understand the concepts discussed in class, and prepare for the exams. All problem sets are due on the date specified in the class schedule above. Problems will focus on material from 2-3 chapters, and will be posted approximately a week before the due date. Students are encouraged to write their assignment as nicely as possible or type them. ***The list of student groups is due at 12 pm (NOON) on Wed., March 11, 2009.*** *Note, that the first problem set is due on Thursday, March 12.* Those who do not find teammates will be placed in groups randomly by the instructor. The list of student groups will be posted on Oncourse.

Class Policies

Attendance
Attendance will be taken regularly. Each unexcused absence will be 2 points off of your grade – that is, *2 points will be deducted from your participation grade for each unexcused absence.*

Participation
Your participation will be assessed based on: (a) your performance on *five short unannounced quizzes (2 pts each)*; and, (b) the quantity and quality of your involvement during class. Class involvement might include solving problems on the board, responding to questions, group exercises, etc. The classroom is the primary forum for addressing your concerns and difficulties with the material. So, please do ask questions. You can also send an email to me or the teaching assistant, and arrange time to meet with us outside of class.

Academic Honesty
Academic misconduct will be treated according to current IU regulations contained in the *Code of Student Rights, Responsibilities, and Conduct* (See: Academic Misconduct: http://www.dsa.indiana. edu/Code/Part_3all.html, and Jurisdiction Concerning Academic Misconduct, http://www.dsa. indiana.edu /Code/Part_4all.html. Each student should understand his/her rights and responsibilities under the *Code*.

Notebook/pad and Wireless Communication
Use of notebooks/notepads, cellular phones, or other electronic devices during class is not permitted. Students are encouraged to use these outside the classroom, where their use does not present a distraction to students and the overall learning process. Should you have any questions regarding laptop use, email or talk to me.

Late Assignments, Missed Exams & Incompletes
For each day a problem set is late, *1 letter grade will be deducted* from your grade for that assignment. For instance, if you scored 95 (A), you'd receive 90 (A-) if your assignment was one day overdue; B+ if it was two days overdue, and so on. If there are extenuating circumstances prohibiting you from completing your work on time, please notify me before the due date. Make-up exams will not be given. If you miss an exam your score will be zero. Proper documentation may be necessary to justify late assignments or missed exams. There will be no incomplete grades except under extraordinary circumstances with the appropriate documentation. Incompletes will only be given in accordance with the policy set forth in the IU Academic Handbook:
http://www.indiana.edu/~deanfac/acadhbk/acad_handbk_2004.pdf.

Students with Disabilities Note
If you are registered with the IU Office of Disabled Student Services as having a disability that requires special consideration in the administration of exams, a written request for accommodation must be made by the end of the first week of class. The IU Office of Disabled Student Services can be reached at 855-3508.