SPEA K300: Statistical Techniques Section 6634
Spring 2016
T, TH 5:45-7:00PM PV169

Instructor:	Lindsey Bullinger
Office:	SPEA-412
Office hours:	TH 3:30-5:30pm or by appointment via email
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Teaching Assistant:	Jennifer Teson
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Office hours:	By appointment via email
Walk-In Tutoring:	M/W 7-9pm, HH 4083
	F 1-4pm PV 169

Course Goals and Learning Outcomes

Course description and goals:

Statistics is the science of collecting, summarizing, analyzing, and drawing conclusions from data. K300 is an introduction to statistics for college and university students. The course covers descriptive statistics, probability theory and distributions, the nature of random variables, sampling distributions, statistical inference, point and confidence interval estimation of parameters (mean, standard deviation, etc.), hypothesis testing, and bivariate and multivariate regression. By the end of the class, you will be able to:

- Use the language of statistics
- Apply statistical tools to problem solving
- Explain how decision-making can be improved through statistical analysis
- Explain the nature and use of distributions
- Apply sample data to generalize to larger populations
- Describe the importance and use of sampling distributions and their parameters and statistics
- Explain the properties and limitations of estimators
- Perform hypothesis testing procedures and explain their results and implications
- Determine the nature and strength of relationships between variables
- Use computer tools to perform statistical analysis
- Describe how statistical analysis can be used to misrepresent or mislead

A lecture/discussion format will generally be used for class sessions, supplemented with collaborative, in-class exercises designed to enrich the learning environment. In addition, we will also use class time to develop computer tools for carrying out statistical analysis.

Required Materials

Textbook (e-book included with the purchase of Pearson MyStatLab)

Elementary Statistics 12/E by Mario Triola ISBN: 9780321836960

Pearson MyStatLab: Online Homework & Other Study Materials

Website: http://www.pearsonmylabandmastering.com/
Course Name: SPEA K300-6634 Bullinger
Course ID: bullinger19949
Access Code: WMSLSS-CTTTT-BORAK-DEWAN-PASTO-PORES
Student Support Line: 844-292-7015

Scientific Calculator

Any standard scientific calculator that can be purchased for $15-20 should suffice.

Course Requirements

Requirement	% of Final Grade
Homework	20
Quizzes	20
Exam 1	15
Exam 2	15
Exam 3	15
Group Policy Project	10
Class Participation	5

Homework

Throughout the course, there will be eight online homework assignments, to be submitted online via MyStatLab, each covering material from the previous classes. The purpose of the homework is to help you study and prepare for exams. Assignments are due at 5:45PM on the due date. You will be able to re-take the homework one time if you are unhappy with your grade, only having to answer those questions that were incorrect in the first try. The final grade for the assignment will be the best of the two. You are encouraged to discuss the assignments with your peers, however the final assignment submitted must be your own work. MyStatLab provides several sources for help, including videos and an adaptive learning component (Study Plan), as well as the TA and instructor. There may be other homework assignments (e.g. article summary) that will also be included in this section. Homework assignments will comprise 20% of your final grade.

Quizzes

There will be several in-class quizzes. These quizzes will be short (2-3 questions), and are designed for you to demonstrate your knowledge acquisition from class participation and homework assignments. Together, quizzes will be worth 20% of your final grade.

Exams

Three exams will comprise 45% of your final grade. Each exam will cover largely the material covered in the preceding class sessions, however, some cumulative knowledge is necessary to interpret and apply the statistical tools. You will not be required to memorize formulas for the exams, however you will need to know when to apply a particular formula for a given problem. In addition to solving problems, exams will likely contain short answer essays asking for interpretation of data presented. Calculators are allowed and any necessary statistical tables will be provided.

Final Group Project

Because of the emphasis in this course on practical application of statistical knowledge in preparation for "real world" experiences, 10% of your final grade will consist of an applied statistical analysis project to be done in a group. Groups will consist of 5-7 members, though the standard size of a group may be adjusted when enrollment becomes stable. The professor will identify group membership after the first exam. Detailed instructions for the group research project will be dispersed later.

Class Participation

Attendance and participation are critical for each student to achieve the course outcomes. Please note that attendance and participation are not the same. Students who miss more than three classes will lose all participation points, as it is impossible for a student to participate if s/he is not present. Likewise, students who attend all classes but do not actively participate will not earn all participation points. The instructor will not hold make-up sessions to answer questions regarding assignments or exams should these questions have been addressed in class. Of course this does not take into account a legitimate excuse for not attending a class, such as illness, family medical problems or emergencies, etc. Please contact me if such events should occur.

Course Policies

Communication: Email is the preferred method of communication. All email messages must originate from your Indiana University sponsored email account. Please use a professional salutation, proper spelling and grammar, and patience in waiting for a response. The professor reserves the right to not respond to e-mails that are drafted inappropriately. Please begin your subject with K300 when composing emails to either the professor or the TA (e.g. "K300: Question About Homework 1). Please email the instructor and the TA directly rather than through the Oncourse message system.

Electronic Devices: The use of laptops, tablets, or other mobile devices is permitted only for class-related work. Audio and video recording is not allowed unless prior approval is given by the instructor. Please mute all electronic devices during class.

Late Work:

Due dates for all assignments are noted in the syllabus and are non-negotiable. Late work will not be accepted. Exceptions to these guidelines will be made only under unusual circumstances, and will require valid documentation from the student.

Civility:

Civility is important in an academic community to ensure that all parties—students, staff, and faculty—are working in an environment that fosters achievement of the individual's and community's goals and objectives. Discourteous behaviors during class such as reading non-course materials, listening to headphones, talking or laughing with others, chronically arriving late, will not be tolerated. Pursuant to the Indiana University Student Code of Conduct, disorderly conduct which interferes with teaching, research, administration, or other university or university-authorized activity will not be tolerated and will be immediately reported to the Office of The Dean of Students for appropriate disposition which may result in disciplinary action including possible suspension and/or expulsion from the university.

Syllabus Revision:

The instructor reserves the right to revise the syllabus when she feels it necessary.

Class Schedule

Note: All assignment due dates and the course schedule are subject to change at the instructor's discretion; students will be given reasonable notice in class of any changes; in addition, changes will be posted.

Class	Date	Topic	To Prepare for Class	Due
1	Jan 12	Course Orientation	None	
2	Jan 14	Introduction to Statistics	Read Ch 1 (1-4)	
3	Jan 19	Frequency Distributions & Graphs	Read Ch 2 (1-4)	
4	Jan 21	Measures of Central Tendency and Variation	Read Ch 3 (1-3)	• Homework 1 (Ch 1-2)
5	Jan 26	Measures of Variation and Relative Standing	Read Ch 3 (4)	
6	Jan 28	Probability	Read Ch 4 (1-3)	• Homework 2 (Ch 3)
7	Feb 2	Probability and Counting Techniques	Read Ch 4 (4-6)	
8	Feb 4	Probability Distributions & Binomial Distribution	Read Ch 5 (1-3)	
9	Feb 9	Review Session		• Homework 3 (Ch 4-5)
10	Feb 11	Exam #1		
11	Feb 16	The Normal Distribution: Intro & Application	Read Ch 6 (1-3)	
12	Feb 18	The Normal Distribution: Central Limit Theorem	Read Ch 6 (4-7)	

13	Feb 23	Confidence Intervals: Proportion and Means	Read Ch 7 (1-3)	• Homework 4 (Ch 6)
14	Feb 25	Confidence Intervals: Variance	Read Ch 7 (4)	
15	Mar 1	Hypothesis Testing	Read Ch 8 (1-3)	• Homework 5 (Ch 7)
16	Mar 3	Hypothesis Testing	Read Ch 8 (4-5)	
17	Mar 8	Review Session		• Homework 6 (Ch 8)
18	Mar 10	Exam #2		
19	Mar 15	Spring Break – No Class	---	---
20	Mar 17	Spring Break – No Class	---	---
21	Mar 22	Inferences from Two Samples	Read Ch 9 (1-3)	
22	Mar 24	Inferences from Two Samples	Read Ch 9 (4-5)	
23	Mar 29	Correlation	Read Ch 10 (1-2)	• Homework 7 (Ch 9)
24	Mar 31	Bivariate Regression	Read Ch 10 (3-4)	• Final Project Part I
25	Apr 5	Bivariate Regression		
26	Apr 7	Multivariate Regression	Read Ch 10 (5)	
27	Apr 12	Computer Lab		
28	Apr 14	Multivariate Regression	Read Crosby and Holtgrave (2006) – posted to Oncourse	• Article Summary • Final Project Part II
29	Apr 19	Peer Review of Group Projects		• Homework 8 (Ch 10) • Draft of Final Project
30	Apr 21	Group Presentations		• Final Project
31	Apr 26	Group Presentations		
32	Apr 28	Review Session		
33	May 5	Exam #3 7:15-9:15pm		

University Policies

Accommodations:

Students with a learning disability, hearing impairment, speech impairment, or any other disability that may affect their ability to fulfill a requirement of the College should contact the Disability Services for Students in Franklin Hall 096, (812) 855-7578, prior to registering. Requirements will not be waived for students with disabilities; however, some modifications may be made within specific courses. Source: http://www.indiana.edu/~college/ado/policies.shtml

Academic Dishonesty:

This class has a zero tolerance policy for academic dishonesty, including cheating and plagiarism. In this era of information exchange, the effects of academic dishonesty can permanently damage your professional reputation; the wide availability of information on the Internet also makes plagiarism extremely easy to detect. If caught, you will not only receive a zero on your assignment and an F for the course, but you will face possible

expulsion from the class and from Indiana University. Students are expected to adhere to IU's Code of Student Rights, Responsibilities, and Conduct, available online at: http://www.iu.edu/~code/

As a rule of thumb, when in doubt, cite the source! Plagiarism is using another person's words, ideas, artistic creations, or other intellectual property without giving proper credit. According to the Code of Student Rights, Responsibilities, and Conduct, a student must give credit to the work of another person when he/she does any of the following:

- Quotes another person's actual words, either oral or written;
- Paraphrases another person's words, either oral or written;
- Uses another person's idea, opinion, or theory; or
- Borrows facts, statistics, or other illustrative material, unless the information is common knowledge.

There is, however, much more to avoiding plagiarism than just citing a reference. To help you recognize plagiarism, the IU Writing Center has prepared a helpful guide: *Plagiarism: What It Is and How to Recognize and Avoid It.* You can find it online at: http://www.indiana.edu/~wts/pamphlets.shtml. This is one of the few documents that actually give you examples of what constitutes plagiarism and strategies for avoiding it. Carefully review this document and use it as a guide as you complete your assignments (in every course).

Religious Holidays:

In accordance with the Office of the Vice Provost for Faculty and Academic Affairs Guidelines, any student who wishes to receive an excused absence from class must submit a request form to the course instructor by the end of the 2nd week of the semester. The form must be signed by the instructor, a copy retained by the instructor, and the original returned to the student. Information about the policy on religious observation can be found at: https://www.indiana.edu/~vpfaa/academicguide/index.php/Policy_H-10

Course Withdrawals:

Students who stop attending class without properly withdrawing from the class may receive a grade of 'F'. It is important to withdraw from a course within specified timeframes, which can be found at: http://studentcentral.indiana.edu/register/register-classes/change-registration/drop-add.shtml. Note that withdrawals after Week 12 of a regular session or Week 4 of a summer session are rarely granted. Poor performance in a course is not grounds for a late withdrawal.

Incompletes:

A grade of incomplete (I) indicates that a 'substantial portion' of the work in a course has been satisfactorily but not entirely completed by the student as of the end of the semester. The incomplete can be given to a student facing a hardship such that such that it would be unjust to hold the student to the established time limits for completing the work. To be eligible for the incomplete in a SPEA course, the student's work must be of passing quality, and the student must have completed 75% of the course requirements. **Poor performance**

in a course is not grounds for an incomplete. SPEA follows the campus guidelines, which may be accessed at the Office of the Registrar's website at http://www.indiana.edu/~registra/Registration/genreginfo.html#inc, in awarding incompletes. Incompletes must be removed within a time period not to exceed one year after the semester in which the student was enrolled in the course. The incomplete will revert to an 'F' if the work is not completed within the allotted timeframe established by the instructor.

If you have any problems in this course, or in other aspects of your student or professional life, please feel free to come see me during office hours or by appointment.