SPEA K300 – Spring 2017
Statistical Techniques Course Syllabus

MW 04:00 pm – 05:15 pm BH 109
Instructor: Dr. Henry K. Wakhungu
Office: SPEA 427
Phone: (SPEA) 855-9820
    (Home) 339-8873 (Leave message)
Email: hewakhun@indiana.edu
Office Hrs: MW 08:20 - 09:20 pm,
    or by appointment

Class Number: 9174
TA: Nicole Vahanian
Email: nvahania@umail.iu.edu
UTA: Mohamed Mohamed
Email: moosmoha@indiana.edu
Office Hours: By appointment
Secretary: Charlie Abbott
Mailbox: SPEA 4th Floor

Course Description and Objectives

This course provides an introduction to basic statistical analysis and interpretation. Topics covered in this course include (but are not limited to) the following: the nature of statistical data, ordering and manipulation of data, measures of central tendency, probability, statistical inferences, hypothesis testing, estimation and correlation and regression. The focus of this course is on the practical application and interpretation of statistics for intelligent functioning in a professional or academic environment. As such, the course simulates the real environment as much as possible, comprised of peers and resources to aid in statistical application and interpretation. While it is necessary to demonstrate individual mastery of the key concepts taught in this course, it is equally imperative to develop skills and techniques to apply statistical knowledge in a practical setting.

Required Texts/ Materials:
1. Triola, Mario F. Elementary Statistics. 12th ed. Boston: Pearson/Addison-Wesley, 2012.
2. Microsoft Excel
3. MyStatLab Platform (Integrated in Canvas)
4. StatCrunch
5. TI-83/84 Calculator

*Note: **Prerequisite** for this class is M014 or equivalent. Students should have an understanding of basic high school algebra, and should be able to navigate Microsoft Excel and Microsoft Word applications.*

Canvas
Canvas will be used throughout the course and should be checked on a regular basis for announcements and assignments. All homework assignments will be posted to Canvas on the date assigned in the syllabus; they will not be distributed in class or by e-mail. If you are unable to access Canvas for any reason, please notify me immediately.

Course Requirements
1. Homework assignments must be turned in on-line or in-class individually. However, discussing assignments in groups prior to completion is strongly encouraged.
2. Late assignments (homework or project) will be penalized one letter grade per day (10%) unless given prior approval by the instructor for extenuating circumstances.
3. Make up exams will be given only for proven and substantiated extenuating circumstances. Make up exams will be different, and generally more difficult than the exams given at the scheduled time. Per school policy, the final exam must be taken at the scheduled time (different than normal class time). It is your responsibility to ensure that you have no conflicts with the final exam time.
4. Students are expected to attend class and arrive on time. Absence from class and continued tardiness will result in a lower participation grade.
5. All cell phones and pagers should be silent or turned off while class is in session.

Assignments / Grading

Course grades will be assigned based upon the following distribution:

Assignment	Points	Final Grade %
Homework (11 @ 20 points each)	220	22.0
Quizzes (11 @ 15 points each)	165	16.5
Exam 1	140	13.0
Exam 2	160	16.0
Exam 3	180	18.0
Group Research Project	85	8.5
Participation/ Attendance	10	1.0
Adaptive Learning Study Plan	20	3.0
Reflection (Harnessing online Resources)	20	2.0
TOTAL	**1000**	**100.0**

Grading Scale (Rounded to one decimal place)

97 -100 = A+	95 - 96.9 = A	90 - 94.9 = 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-

Homework
Throughout the course, you will complete 11 on-line homework assignments, each covering one chapter of the material. In the syllabus, the homework assignments are designated as follows: assignment number – chapter. For example, homework 1 is the first of the eleven homework assignments, and covers chapter one in the Triola's text. You will be given complete assignments at least one week in advance of their due date. You are encouraged to discuss the assignments with your peers, however, the finished product turned in **MUST BE YOUR OWN WORK**. Understanding the homework assignments is critical to performing well on the exams.

The on-line homework assignments will comprise 220 points (22%) of your final grade, or 20 points for each 11 chapter HW assignments. Homework assignments are due on the on-line due date (date posted on the syllabus). Late homework assignments will be penalized 10% per day late.

Quizzes
You will complete 11 on-line quizzes 165 points (16.5%) of your final course grade, or 15 points for each 11 chapter quizzes. The quizzes will be assigned after the chapter homework assignments have been submitted.

Exams
Three exams will comprise 480 points of your final grade. Each exam will cover predominantly the material covered in the prior class sessions, as listed in the syllabus; however some cumulative knowledge is necessary to interpret and apply the statistical tools. Exam 1(140 points), Exam 2 (160 points), and Exam 3 (will be worth 180 points) of your final grade. Exams will include problems similar to those completed on homework assignments, and therefore a critical understanding of homework assignments is necessary for performing well on the exams. You will not be required to memorize formulas for the exams; however, you will need to know when to apply a particular formula to a given problem. In addition to solving problems, exams will likely contain short answer essays asking for interpretation of data presented.

Group Research Project (Report and Presentations)
(Please refer to the "Group Project Guide", handed out separately and available on Canvas for this class.)
Because of the emphasis in this course on practical application of statistical knowledge in preparation for real world experiences, a portion of your course grade (85 points) will consist of an applied group statistical analysis project. Due to the large number of students enrolled in this class, groups will consist of 5 members

each, unless otherwise notified or approved by the instructor. A list of group members will be self-selected and submitted to the instructor for approval by the second class session. The Research Project is cumulative in nature and it is therefore a good idea to meet with your group members regularly throughout the semester. In addition, group members may serve as excellent resources when completing homework assignments and preparing for exams. The grade for the group project (100 points total), will be based on the following:

Individual Effort (as evaluated by group members)		10
Project Presentation		25
Professionalism	(5)	
Clarity of Presentation	(5)	
Visual Aids	(5)	
Project Report		60
Total Possible Points		85

Participation and Attendance

Because of the importance of active in-class discussion and participation, 10 points (1%) of your final grade is based on your attendance and participation in class. More than 2 unexcused absences WILL result in a reduction of your participation grade. Additionally, it imperative that you become an active participant in class discussions, including asking questions, volunteering to solve problems on the board and participating in class activities. Failure to participate will also result in a reduction of your participation grade.

Adaptive Learning Study Plan

The continuously adaptive Study Plan provides personalized recommendations to students based on their performance on homework, tests, and quizzes. These assignment types have been shown to significantly affect mastery assessment in the Study Plan, and specify the score required for mastering a Study Plan objective. The Adaptive Learning Study Plan activities/exercises will contribute 20 points (2%) towards the overall course grade. The adaptive learning resources have been intentionally adapted to orchestrate the allocation of mediated digital resources according to the unique needs of each learner in the statistics course.

Policy on Incompletes

There will be no incomplete grades except under extraordinary circumstances with the appropriate documentation, in accordance with the IU Academic Handbook.

Academic Dishonesty:

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

For example, under 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:
a. Quotes another person's actual words, either oral or written;
b. Paraphrases another person's words, either oral or written;
c. Uses another person's idea, opinion, or theory; or
d. Borrows facts, statistics, or other illustrative material, unless the information is common knowledge.

This also entails that you MAY NOT copy homework from another student, either in whole or in part.

Disclaimer

This syllabus is subject to change and may be amended throughout the course to reflect any changes deemed necessary by the instructor.

SPEA K300: STATISTICAL TECHNIQUES
TOPICS AND READING ASSIGNMENTS - SPRING 2017

Date	Topics and Readings	Assignments
Jan 09	Introduction to Statistics ❖ 1-1 Review and Preview ❖ 1-2 Statistical and Critical Thinking ❖ 1-3 Types of Data	• Review syllabus and assignments, course expectations, and group research project • **Proposed Research Group Listing** **HW #1 Assigned (Due: 01/18)**
Jan 11	Introductions to Statistics ❖ 1-4 Collecting Sample Data	Quiz #1 Assigned (Due: 01/18)
Jan 16	**Martin Luther King**	**NO CLASSES**
Jan 18	Summarizing and Graphing ❖ 2-1 Review and Preview ❖ 2-2 Frequency Distributions	HW #2 & Quiz #2 Assigned (Due: 01/25)
Jan 19	Summarizing and Graphing ❖ 2-3 Histograms ❖ 2-4 Graphs that Enlighten and Graphs That Deceive	
Jan 23	Statistics for Describing, Exploring, and Comparing Data ❖ 3-1 Review and Preview ❖ 3-2 Measure of Center ❖ 3.3 Measure of Variation	HW #3 & Quiz #3 Assigned (Due: 01/30)
Jan 25	Statistics for Describing, Exploring, and Comparing Data ❖ 3-3 Measure of Variation (contd) ❖ 3-4 Measure of Relative Standing and Boxplots	
Jan 30	Probability ❖ 4-1 Review and Preview ❖ 4-2 Basic Concepts and Probability ❖ 4-3 Additional Rule ❖ 4-4 Multiplication Rule: Basics	HW #4 & Quiz #4 Assigned (Due: 02/01)
	Ch.1 – Ch.4 Review	*Exam Review*
Feb 01	**(Chapter 1 – 4)**	*Exam #1*
Feb 06	Discrete Probability Distributions ❖ 5-1 Preview and Review	HW #5 & Quiz #5 Assigned (Due: 02/13)

	5-2 Probability Distributions	
Feb 08	Discrete Probability Distributions ❖ 5-3 Binomial Probability Distributions ❖ 5-4 Parameters for Binomial Distributions	
Feb 13	Normal Probability Distributions ❖ 6-1 Review and Preview ❖ 6-2 The Standard Normal Distribution ❖ 6-3 Applications of Normal Distribution	HW #6 & Quiz #6 Assigned (Due: 02/22)
Feb 15 Feb 20	Normal Probability Distributions ❖ 6-3 Applications of Normal Distribution (continued) ❖ 6-4 Sampling Distributions and Estimators ❖ 6-5 The Central Limit Theorem ❖ 6-6 Assessing Normality ❖ 6-7 Normal as Approximation to Binomial	
Feb 22	Estimates and Sample Sizes ❖ 7-1 Review and Preview ❖ 7-2 Estimating a Population Proportion ❖ 7-3 Estimating a Population Mean	HW #7 & Quiz #7 Assigned (Due: 03/01)
Feb 27 Mar 01	Estimates and Sample Sizes ❖ 7-4 Estimating a Population Standard Deviation or Variance Ch. 5 – 7 Review	*Exam Review*
Mar 06/08	**Exam #2 (Chapter 5 – 7)**	
Mar 12 **Mar 19**	*Spring Break - No Classes*	
Mar 20	Hypothesis Testing ❖ 8-1 Review and Preview ❖ 8-2 Basics of Hypothesis Testing ❖ 8-3 Testing a Claim About a Proportion	HW #8 & Quiz #8 Assigned (Due: 03/27)
Mar 22	Hypothesis Testing ❖ 8-4 Testing a Claim About a proportion (continued).	
Mar 27	Inferences from Two Samples ❖ 8-4 Testing a Claim About	HW #9 & Quiz #9 Assigned (Due: (04/03)

Mar 29	a Mean Inferences from Two Samples ❖ 9-1 Review and Preview ❖ 9-2 Two Proportions ❖ 9-3 Two Means: Independent Samples ❖ 9-4 Two Dependent Samples (Matched Pairs) ❖	
Apr 3	Correlation and Regression ❖ 10-1 Preview and Review ❖ 10-2 Correlation	HW #10 & Quiz #10 Assigned (Due: 04/10)
Apr 5	Correlation and Regression ❖ 10-1 Review and Preview ❖ 10-3 Regression	
Apr 10	Analysis of Variance ❖ 12-1 Review and Preview ❖ 12-2 Two-Way ANOVA	HW #11 & Quiz #11Assigned (Due: 04/17)
Apr 12	❖ Analysis of Variance ❖ 12-1 Review and Preview ❖ 12-3 Two-Way ANOVA	
Apr 17	❖ **Research Group Projects Consultations/Wrap-Up.**	
Apr 19	*Exam #3 (Ch. 8 – 10 & 12) Review*	
Apr 24	**Exam #3 (Chapter 8 – 10 & 12)**	
Apr 26	**Research Project Presentations; Class Party**	
May 1		
May 5	**Finals Week**	
Bahati Njema!	**Mazel Tov!**	