Course Information

JAN 12 2016

Date Submitted: 11/9/2015

Current Prefix and Number: EPE - Edc. Policy Studies &Eval. , EPE 557 GATHERING, ANALYZING &USING EDUAL DATA

Other Course:

Proposed Prefix and Number: EPE 557

What type of change is being proposed?

Major Change

Should this course be a UK Core Course?   Yes

Statistical Inferential Reasoning

1. General Information

a. Submitted by the College of: EDUCATION

b. Department/Division: Educational Policy Studies and Evaluatio

c. Is there a change in 'ownership' of the course?   No

If YES, what college/department will offer the course instead: Select...

e. Contact Person

Name: Kelly Bradley

Email: kdbrad2@uky.edu

Phone: 859-797-7874

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

f. Requested Effective Date

Semester Following Approval: Yes OR Effective Semester:

2. Designation and Description of Proposed Course

a. Current Distance Learning (DL) Status: Already approved for DL*

b. Full Title: GATHERING, ANALYZING, AND USING EDUCATIONAL DATA

Proposed Title: GATHERING, ANALYZING, AND USING EDUCATIONAL DATA

c. Current Transcript Title: GATHERING, ANALYZING &USING EDUAL DATA

1

Proposed Transcript Title:

d. Current Cross-listing: Same as EDP 557

Proposed – ADD Cross-listing :

Proposed – REMOVE Cross-listing:

e. Current Meeting Patterns

   LECTURE: 3

   LABORATORY: 1

Proposed Meeting Patterns

   LECTURE: 3

   LABORATORY: 1

f. Current Grading System: ABC Letter Grade Scale

   Proposed Grading System: *Letter (A, B, C, etc.)*

g. Current number of credit hours: 3

   Proposed number of credit hours: 3

h. Currently, is this course repeatable for additional credit?   No

   Proposed to be repeatable for additional credit?   No

   If Yes: Maximum number of credit hours:

   If Yes: Will this course allow multiple registrations during the same semester?   No

2i. Current Course Description for Bulletin: The course covers applications of statistical and graphical methods for educational and evaluation data. Basic descriptive statistics, correlation, normal distributions and hypothesis testing will be covered. An emphasis is placed on exploratory data analysis and interpretation of results within the broad contexts of education and evaluation.

   Proposed Course Description for Bulletin: This course is rooted in the conceptual understanding of statistics and covers applications of statistical and graphical methods for educational and evaluation data. Basic descriptive statistics, correlation, normal distributions and hypothesis testing will be covered. An emphasis is placed on exploratory data analysis and interpretation of results within the broad contexts of education and evaluation. Statistical literacy exercises will be used for comprehension and application of materials. In addition, applications of statistical software will be demonstrated.

2j. Current Prerequisites, if any: Prereq: MA 109 or equivalent; undergraduate (with permission) or graduate status in the College of Education; or consent of the instructor.

   Proposed Prerequisites, if any: Prereq: MA 109 or equivalent; undergraduate (with permission) or graduate status in the College of Education; or consent of the instructor.

2k. Current Supplementary Teaching Component:

   Proposed Supplementary Teaching Component:

3. Currently, is this course taught off campus?   No

Proposed to be taught off campus?   No

If YES, enter the off campus address:

4. Are significant changes in content/student learning outcomes of the course being proposed?   No

If YES, explain and offer brief rational:

5a. Are there other depts. and/or pgms that could be affected by the proposed change?   No

If YES, identify the depts. and/or pgms:

5b. Will modifying this course result in a new requirement of ANY program?   No

If YES, list the program(s) here:

6. Check box if changed to 400G or 500:   No

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1.How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2.How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3.How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4.Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5.How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6.How do course requirements ensure that students make appropriate use of learning resources?

7.Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8.How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (http://www.uky.edu/UKIT/)?

9.Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)?   NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10.Does the syllabus contain all the required components?   NO

11.I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|BETHG|Beth L Goldstein|EPE 557 CHANGE Dept Review|20140929

SIGNATURE|RJREES2|Robert J Reese|EPE 557 CHANGE Cross-List Chair Review|20140929

SIGNATURE|MYRT|Martha L Geoghegan|EPE 557 CHANGE College Review|20141108

SIGNATURE|JMETT2|Joanie Ett-Mims|EPE 557 CHANGE UKCEC Review|20151005

SIGNATURE|MQFLET00|Melissa Q Pittard|EPE 557 CHANGE UKCEC Expert Review|20151005

SIGNATURE|JMETT2|Joanie Ett-Mims|EPE 557 CHANGE Undergrad Council Review|20151014

SIGNATURE|ZNNIKO0|Roshan Nikou|EPE 557 CHANGE Graduate Council Review|20160112

Course Change Form

https://myuk.uky.edu/sap/bc/soap/rfc?services=

Open in full window to print or save

Generate R

Attachments:

| | Browse... | Upload File |

	ID	Attachment
Delete	3771	CourseReviewForm_557.pdf
Delete	5429	GradStudent_557_Article_Assignment.pdf
Delete	5726	Syllabus_Online_557_Update_Final.pdf

First 1 Last

NOTE: Start form entry by choosing the Current Prefix and Number
(*denotes required fields)

Current Prefix and Number:	EPE - Edc. Policy Studies & Eval. EPE 557 GATHERING, ANALYZING & USING EDUAL DATA		*Proposed Prefix & Number:* (example: PHY 401G) ☑ Check if **same as current**	EPE 557

*	What type of change is being proposed?	☑ Major Change ☐ Major – Add Distance Learning ☐ Minor - change in number within the same hundred series, except 799 is the same "hundred series" ☐ Minor - editorial change in course title or description which does n change in content or emphasis ☐ Minor - a change in prerequisite(s) which does not imply a change course content or emphasis, or which is made necessary by the elim or significant alteration of the prerequisite(s) ☐ Minor - a cross listing of a course as described above

Should this course be a UK Core Course? ◉ Yes ○ No

If YES, check the areas that apply:

☐ Inquiry - Arts & Creativity	☐ Composition & Communications - II
☐ Inquiry - Humanities	☐ Quantitative Foundations
☐ Inquiry - Nat/Math/Phys Sci	☑ Statistical Inferential Reasoning
☐ Inquiry - Social Sciences	☐ U.S. Citizenship, Community, Diversity
☐ Composition & Communications - I	☐ Global Dynamics

1.	General Information	
a.	Submitted by the College of: EDUCATION	Submission Date: 11/9/2015
b.	Department/Division:	Educational Policy Studies and Evaluatio
c.*	Is there a change in "ownership" of the course?	
	○ Yes ◉ No If YES, what college/department will offer the course instead?	Select...
e.*	* Contact Person Name: Kelly Bradley Email: kdbrad2@uky.edu Phone: 859-797-7874 * Responsible Faculty ID (if different from Contact) Email: Phone:	
f.*	Requested Effective Date:	☑ Semester Following Approval OR Specific Term: 2
2.	Designation and Description of Proposed Course.	
a.	Current Distance Learning(DL) Status:	○ N/A ◉ Already approved for DL* ○ Please Add ○ Please Drop
	*If already approved for DL, the Distance Learning Form must also be submitted unless the department affirms (by checking this box) that the proposed chang affect DL delivery.	
b.	**Full Title:** GATHERING, ANALYZING, AND USING EDUCATIONAL DATA	*Proposed Title:* * GATHERING, ANALYZING, AND US: EDUCATIONAL DATA
c.	**Current Transcript Title** (if full title is more than 40 characters):	GATHERING, ANALYZING & USING EDUAL DATA
c.	*Proposed Transcript Title (if full title is more than 40 characters):*	

d.	Current Cross-listing:		☐ N/A		OR	Currently[2] Cross-listed with (Prefix & Number):		Same as EDP

	Proposed -- ADD[3] Cross-listing (Prefix & Number):			

	Proposed -- REMOVE [3,4] Cross-listing (Prefix & Number):			

e. | Courses must be described by **at least one** of the meeting patterns below. Include number of actual contact hours [5] for each meeting pattern

Current:	Lecture 3	Laboratory[5] 1	Recitation	Discussion	Indep. Study
	Clinical	Colloquium	Practicum	Research	Residency
	Seminar	Studio	Other	Please explain:	

Proposed: *	Lecture 3	Laboratory[5] 1	Recitation	Discussion	Indep. Study
	Clinical	Colloquium	Practicum	Research	Residency
	Seminar	Studio	Other	Please explain:	

f.	Current Grading System:	ABC Letter Grade Scale

	Proposed Grading System:*	⦿ Letter (A, B, C, etc.) ○ Pass/Fail ○ Medicine Numeric Grade (Non-medical students will receive a letter grade) ○ Graduate School Grade Scale

g.	Current number of credit hours:	3	Proposed number of credit hours:*	3

h.*	Currently, is this course repeatable for additional credit?	○ Yes ⦿ No
*	Proposed to be repeatable for additional credit?	○ Yes ⦿ No
	If YES:	Maximum number of credit hours:	
	If YES:	Will this course allow multiple registrations during the same semester?	○ Yes ⦿ No

i.	Current Course Description for Bulletin:

The course covers applications of statistical and graphical methods for educational and evaluation data. Basic descriptive statistics, correlation, normal distributions and hypothesis testing will be covered. An emphasis is placed on exploratory data analysis and interpretation of results within the broad contexts of education and evaluation.

*	Proposed Course Description for Bulletin:

This course is rooted in the conceptual understanding of statistics and covers applications of statistical and graphical methods for educational and evaluation data. Basic descriptive statistics, correlation, normal distributions and hypothesis testing will be covered. An emphasis is placed on exploratory data analysis and interpretation of results within the broad contexts of education and evaluation. Statistical literacy exercises will be used for comprehension and application of materials. In addition, applications of statistical software will be demonstrated.

j.	Current Prerequisites, if any:

Prereq: MA 109 or equivalent; undergraduate (with permission) or graduate status in the College of Education; or consent of the instructor.

*	Proposed Prerequisites, if any:

Prereq: MA 109 or equivalent; undergraduate (with permission) or graduate status in the College of Education; or consent of the instructor.

k.	Current Supplementary Teaching Component, if any:	○ Community-Based Experience

			○ Service Learning ○ Both
	Proposed Supplementary Teaching Component:		○ Community-Based Experience ○ Service Learning ○ Both ○ No Change

3.	Currently, is this course taught off campus?	○ Yes ◉ No
*	*Proposed to be taught off campus?*	○ Yes ◉ No
	If YES, enter the off campus address:	

4.*	Are significant changes in content/student learning outcomes of the course being proposed?	○ Yes ◉ No
	If YES, explain and offer brief rationale:	

5.	Course Relationship to Program(s).	
a.*	Are there other depts and/or pgms that could be affected by the proposed change?	○ Yes ◉ No
	If YES, identify the depts. and/or pgms:	

b.*	Will modifying this course result in a new requirement[7] for ANY program?	○ Yes ◉ No
	If YES[7], list the program(s) here:	

6.	Information to be Placed on Syllabus.	
a.	☐ Check box if <u>changed to</u> 400G or 500.	If <u>changed to</u> 400G- or 500-level course you must send in a syllabus and *you must include the differentiation* between under and graduate students by: (i) requiring additional assignments by the graduate students; and/or (ii) establishing different grac criteria in the course for graduate students. (See *SR 3.1.4*.)

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[1]See comment description regarding minor course change. *Minor changes are sent directly from dean's office to Senate Council Chair.* If Chair deems the change as "not minor," the form will l appropriate academic Council for normal processing and contact person is informed.
[2]Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.
[3] Signature of the chair of the cross-listing department is required on the Signature Routing Log.
[4] Removing a cross-listing does not drop the other course – it merely unlinks the two courses.
[5] Generally, undergrad courses are developed such that one semester hr of credit represents 1 hr of classroom meeting per wk for a semester, exclusive of any lab meeting. Lab meeting gene least two hrs per wk for a semester for 1 credit hour. (See *SR 5.2.1*.)
[6] You must *also* submit the Distance Learning Form in order for the course to be considered for DL delivery.
[7]In order to change a program, a program change form must also be submitted.

Course Review Form
Statistical Inferential Reasoning
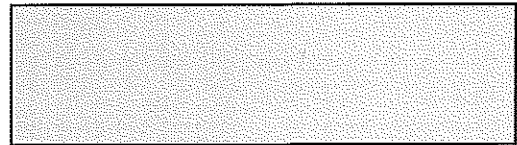
Course: EPE/EDP 557
Gathering, Analyzing, & Using Educational Data

Using the course syllabus as a reference, identify when and how the following learning outcomes are addressed in the course. Since learning outcomes will likely be addressed multiple ways within the same syllabus, please identify a representative example (or examples) for each outcome.

☒ Evidence of course activities that will enable students to evaluate common claims arising from the formal statistical inference conveyed through margins of error and confidence intervals; and to articulate the sense in which margins of error and confidence intervals address and quantify risks that are of practical interest.

Date(s)/location(s) on syllabus or assignment:
Homework I.B/September 04
Homework IV.B. & Lab11/December 04

Brief Description:

Homework I.B. asks students to construct margins of errors with varying sample sizes and discuss the impact that varying sample sizes has on margins of errors. In addition, students are required to construct and interpret a 95% confidence interval for the population proportion. Homework IV.B. and Lab 11 both involve the construction and interpretation of confidence intervals. These confidence intervals range from 50% to 99%, and students are asked to evaluate data claims based on the confidence interval results. The data students will consider includes working hours, film length, student body characteritics, career attainment, and college admission considerations, each of which would be of practical interest to students in the course..

☒ Evidence of course activities that will enable students to evaluate common claims arising from the formal statistical inference conveyed through null hypothesis testing within statistically designed experiments, and to articulate the sense in which null hypothesis testing addresses and quantifies risks that are of practical interest.

Date(s)/location(s) on syllabus or assignment:
Homework IV.C & Lab 12/December 11

Brief Description:
Homework IV.C and Lab 12 are centered on hypothesis testing, with null hypothesis testing being a vital component. Lab 12 requires students to identify the null hypothesis and alternative hypothesis for several tests involving student descriptive data. Students are then required to assess if the null hypothesis can be rejected in each test. Homework IV.C involves a series of scenarios in which claims about the data involved in the scenario are made. Students are required for each scenario to identify the alternative and null hypothesis, as well as interpret if the null hypothesis can be rejected based on the test statistic and p-value the students calculated. Furthermore, students are asked to evlauate how the results of the null hypothesis compare to the claim being made in the scenario and then make a decision about the claim being made in the scenario. The issues students will consider in their homework involves evaluating how results impact business decisions, educational claims, and personal financial decisions.

☒ Evidence of course activities that will enable students to evaluate common claims that arise from statistical constructs, like charts and graphs, tables and numerical summaries, through the informal act of human inference; and to articulate some of the associated challenges (e.g. with conditional

reasoning, hidden variables, confounding, association versus correlation, not having the right information, misinterpreting randomness).

Date(s)/location(s) on syllabus or assignment:
Homework II.A. & Lab 3/September 18
Homework II.D/October 9

Brief Description:

Homework II.A. and Lab 3 are focused on interpreting univariate data presented in graphs, charts, and tables. Homework II.A. presents students with charts and graphs in which they need to interpret the data being represented and explain what information the shape of the distribution provides about the data. In addition, students are required to identify and explain how outliers impacted the data representation. Lab 3 has students develop their charts and graphs using a dataset, and make interpretations about the data based on the shape of the distribution. Homework II.D. requires students to interpret charts representing positive and negative linear correlations, as well as simple linear regressions. For example, students are asked to justify if based on the simple linear regression being charted, the model is predictive of a prescribed variable. In addition, students must identify association and interpret correlations, as well as interpet how correlation varies from causation. Furthermore, students are presented with a simple linear regression in which extreme values have impacted the model fit, and students must interpret the effect this has on the chart and the r value.

☒ Topic distribution includes estimation (at least 25%), statistical testing (at least 25%), describing data (at least 20%), and information literacy (at least 5%).

Date(s)/location(s) on syllabus or assignment:

Estimation - October 23rd, October 30th, and December 4th
Statistical Testing - September 4th, October 9th, and December 11th
Describing Data - September 18th, September 25th, and October 2nd
Information Literacy - August 28th

Brief Description:
A total of 12 topics are covered over the course, beginning with a basic introduction to statistics on August 28th and ending with hypothesis tesing on December 11th. Although these specific topics are addressed in the weekly requirements, it is important to note that these concepts are repeated throughout many of the weeks they are not specifically associated with. For example, the October 9th topic of linear correlation and regression, although specifically targeting the statistical testing topic, requires students to consider estimation in standard deviations, to describe what is occuring with data being represented, and build information literacy by explaining if correlations can be considered cause and effect relationships. Given that there are 12 weeks and three of the topics are required to form 20-25% of the course, each topic is required to be covered on three occassions. The topic of estimation is addressed through the topics of Introduction to Probability, Discrete Probability Distributions, and Confidence Intervals. The topic of statistical testing is addressed through the topics of Sampling and Conducting a Study, Linear Correlation and Regression, and Hypothesis Testing. The topic of data decription is addressed through the topics of numerical description and univariate data, graphs and tables for univariate data, and bivariate data. Finally, the topic of information literacy is addressred in the Introduction to Statistics topic. Again, many of these themes carry throughout the weeks in which they are not specifically being addressed.

☒ Assessable artifact(s) are identified and focused on demonstrating that the use and worth of statistical inference is for making everyday decisions. The artifact(s) should be conceptually focused and not primarily focused on computations and derivations.

Date(s)/location(s) on syllabus or assignment:
Notes/August 28th
Notes/October 9th

Brief Description:
Many artifiacts include discussions or comments of the value of statistics in everyday life in a conceptual format, beginning with the first week of the course. The notes for August 28th include a section dicussing ways in which statistics would be of interest to students and cites a series of examples, including understanding RBI's in baseball, the effects medication has on health outcomes, and how much note taking impacts learning. The theme of rooting learning in practical examples of interest to students is present throughout the course and, furthermore, goes on to express how it relates to every day decision making. For example, the notes on October 9th address how correlations can impact decision making through the use of example problems considering the correlation between weight of a car and gas mileage, as well as experience and worker salary. Furthermore, given that the topic relates to correlation (and correlation cannot confer causation) the topic moves into how these ideas can be tested using simple linear regression. The example walks through the results of the linear regression on weight of a car and gas mileage and interprets what this means. The topic of weight of a car and gas mileage is something that students can relate to and (given that driving is common) something which is of practical interest for everyday decison making.

☒ Sufficient evidence to suggest that the course is not confined to, or even largely focused on computation, but rather is designed to provide a conceptual understanding of statistical inferential reasoning (increasing student skill with computations is a perfectly acceptable by-product of the course). **This box must be checked by the reviewer for the submission to move forward.**

Date(s)/location(s) on syllabus or assignment:
Course Objectives
Learning Outcomes
Homework IV.C/December 11

Brief Description:
As the course objectives state, the key purposes of this course is to gain an understanding of the statistical concepts and its usage, while introducing students to basic statistical techniques. The majority of the outcomes involve interpeting and applying statistical results, with few involving computation. Students do not begin computations until August 25th, and they begin with computing a mean and standard deviation. Any computations students perform are with the intent that students will be prepared to enter a basic regression course, and thus computations are a low level that prepares them for a regression focused course. Furthermore students will use the Statcrunch software for many of the assignments in the course, so computations are not frequently required. A good example of how this course is conceptually focused is the final homework of the course, Homework IV.C., in which half of the students' grades come from stating the varying hypotheses, and making a decision about and interpreting the results of a basic analysis. Overall, the course is largely concpetual, with the principle that students will be able to understand the foundations of statistics in a meaningful way so to apply to everyday life and if they should decide to progress into a regression course.

Reviewer Comments:

Article Review Assignment (*45-points*)

This assignment involves you applying the knowledge of basic statistical principles that you have learned over this course. Once this assignment is completed, you will need to upload your answers into the appropriate Canvas submission form. For this assignment, you need to locate the following article:

> Hove, M. C., & Corcoran, K. J. (2008). Educational technologies: Impact on learning and frustration. *Teaching of Psychology, 35,* 121-125.

** This article has been uploaded (with permission) on the course canvas site.

Use the article to answer questions (3-points each).

1. How many participants were in the study? ____
2. What percent of participants in the study were female? ____
3. What percent of participants in the study were between 18 and 24? ____
4. What was the p-value of the MANOVA conducted? ____
5. Was the MANOVA statistically significant? Yes or No
6. What was the minimum possible score on the academic pretest? ____
7. What was the maximum possible score on the academic posttest? ____
8. How many participants were in the slide-show-supplemented lecture group? ____
9. What percent of participants were in the virtual learning environment group? ____
10. In which group did the academic pretest have the highest mean score?
    a. Traditional lecture
    b. Slide-show-supplemented lecture
    c. Virtual learning environment
11. In which group did the academic posttest have the highest mean score?
    a. Traditional lecture
    b. Slide-show-supplemented lecture
    c. Virtual learning environment
12. In which group did the frustration score have the highest mean score?
    a. Traditional lecture
    b. Slide-show-supplemented lecture
    c. Virtual learning environment
13. In which group did the frustration score have the highest standard deviation?
    a. Traditional lecture
    b. Slide-show-supplemented lecture
    c. Virtual learning environment
14. What was the p-value of the one-way ANOVA on differences in frustration? ____
15. Was the p-value on the one-way ANOVA on differences in frustration statistically significant?
    Yes or No

CONTACT INFORMATION
Kelly Bradley, Ph.D.

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Web page: http://www.uky.edu/~kdbrad2/
Campus Office Hours: 11am – 1PM Monday or by appointment
Virtual Office Hours: Weekly hours as scheduled and by appointment.
- In addition, conference calls and adobe connect video conference meetings may occur.

Graduate Instructor: Richard Mensah, M.S.
Office: 142 Taylor Education Building
Email: kumens2001@yahoo.com

Lab Hours

Monday: 9-11AM in 246 TEB
Monday: 2-4 online
Tuesday: 11AM-1PM in 246 TEB
Tuesday: 5-7PM online
Thursday: 11-1PM in 140 TEB
Thursday: 5-7PM online

Location & Format: Asynchronous, online course delivery

Course Website: https://elearning.uky.edu or Canvas
Login using your link blue username and password
Please check our course website and your e-mail account regularly for course information.

Prerequisites:
MA 109 or equivalent; undergraduate (with permission) or graduate status in the College of Education; or consent of the instructor.

Credit Hours = 3

COURSE OVERVIEW
This course is rooted in the conceptual understanding of statistics and covers applications of statistical and graphical methods for educational and evaluation data. Basic descriptive statistics, correlation, normal distributions and hypothesis testing will be covered. An emphasis is placed on exploratory data analysis and interpretation of results within the broad contexts of education and evaluation. Statistical literacy exercises will be used for comprehension and application of materials. In addition, applications of statistical software will be demonstrated.

It is assumed that you will complete course readings and assignments, ask for help if you have questions, and stay on task.

TEXT AND SOFTWARE
Online Statistics Education: A Multimedia Course of Study. Project Leader: David M. Lane, Ph.D., Rice University. http://onlinestatbook.com/2/index.html
- The text is available as an interactive online manual or to be downloaded as a PDF file and is free thanks to Dr. Lane at Rice University.

StatCrunch software is required. It may be rented, for a nominal fee, or purchased at http://www.statcrunch.com/get-access/ This software will be utilized for all lab activities and may also be used for homework and assessments.

COURSE OBJECTIVES
The three main course objectives are as follows:
1. Develop an understanding of the concepts, terms, and symbols used in statistics.
2. Gain an appreciation of the role of statistics in education, work, and research.
3. Become familiar with basic statistical procedures and techniques.

STUDENT LEARNING OUTCOMES
By the end of this course, you should be able to:
- Identify and discuss the normal distribution
- Create graphs
- Identify skewness
- Explain the role of sampling distributions in inferential statistics
- Explain margins of error and confidence intervals in statistical results
- Provide examples of data types
- Use statistical software to complete basic analyses and interpret results
- Use statistical software to compute and explain correlation
- Interpret Simple Linear Regression results
- Understand the basic rules of probability
- List statistical symbols and explain their role in an analysis
- Provide examples of how statistical analyses are used in academic and non-academic settings
- Provide examples of basic statistical tests and identify their components
- Explain how questions are tested using statistical principles
- Explain the null hypothesis and its importance in hypothesis testing
- List researchers' considerations when developing a survey tool and collecting survey data

COURSEWORK

Homework
An online survey and twelve homework assignments will be given throughout the term. The online survey is worth 6 points and each homework assignment is worth 12 points for a total of 150 homework points. Each homework assignment will include practice problems from the material covered and/or lab questions. For the lab component of the homework, StatCrunch software will be utilized. Each homework assignment will have a corresponding homework quiz in blackboard. The homework points will be earned through these quizzes. If you accurately complete the homework then the quiz will only take a few minutes. The quiz will consist of some or all of the questions on the homework, and they will be timed. The homework quizzes are due by the end of exam week; however, it is recommended you complete them prior to exams. There is no makeup quizzes except in extreme circumstances, so do them early instead of waiting until the last minute.

Discussion Board Participation (Graduate-students only)
Throughout the semester the course instructor will post discussion topics that graduate students must engage with and discuss with one another (undergraduate students are encouraged to discuss as well, however, it is not required). It is expected that graduate students actively engage in each discussion by responding to the discussion topic and the responses of several other students. Not responding to a posted discussion topic within five-days of its posting will result in a loss of points for that discussion board topic, as will posting comments that do not engage with the material.

Article Review Assignment (Graduate-students only)
This assignment will require graduate students to read a journal article and answer several questions about the article using what they have learned about statistics this semester.

Exams
Three exams will be given throughout the term. If a student misses an exam without an excused absence, no make-up will be given. Make-up exams will only be given in situations that are institutionally excused or approved by the instructor. The instructor must be notified as soon as possible if a circumstance arises that may constitute a makeup exam. Exams will be worth 100 points each. The second exam serves as the course mid-term.

Final Exam
There will be a final exam at the end of the semester which will be comprehensive in nature. It may include questions from any topic covered for the first three exams as well as questions for the material covered after the third exam. The final exam must be taken by Wednesday at midnight during final exam week. The final exam can only be taken late in situations pre-approved by instructor or that are excused by intuition policy. The instructor must be notified as soon as possible if a circumstance arises that may constitute a make-up exam. The final exam will be worth 150 points.

REQUIRED TECHNOLOGY
This course requires use of information technology. Students are expected to have regular access to a personal computer with audio capabilities, the internet to complete their learning activities, Microsoft

Word, PowerPoint and, Excel, Adobe Reader, and as necessary a high quality webcam with sound. All web-based activities are to be completed within designated sections of the course site (e.g., Canvas, google document). As such, students will need an active email account and a UK student log-in id and password to enhance communication with the instructor as well as other students in the class.

Canvas. Course materials (Notes, Videos, Assignments, Exercises, Discussion Board, Quizzes, Exams, etc.) for this course will be posted on Canvas at https://elearning.uky.edu. Additional course readings, materials, and/or handouts will be provided electronically by the Instructor as needed. It is the student's responsibility to self-regulate completion of course activities following the timeline on Canvas. A student menu of Canvas support may be accessed online at http://wiki.uky.edu/blackboard/
- Additional support is available by phone at 859-257-1300, or via e-mail at helpdesk@uky.edu.

As stated above, StatCrunch software is required for this class. http://www.statcrunch.com/get-access/

- Statcrunch has online assistance and phone support available. **Chat:** Chat online with a live representative 24/7; **Email:** Ask a question via email and receive a detailed response, monitored 24/7; and **Phone:** Student telephone support 12pm–8pm ET, M-F | 800-677-6337. See more at: http://www.statcrunch.com/support/student-support.php#sthash.PyJUc1eq.dpuf

Distance Learning Library Services. Contact Carla Cantagallo, Distance Learning Librarian Web: http://www.uky.edu/Libraries/DLLS; Email: dllservice@email.uky.edu; Local phone: 859-257-0500, ext. 2171; Long-distance phone: 800- 828-0439, option #6. DL Interlibrary Loan Service: http://www.uky.edu/Libraries/libpage.php?lweb_id=253&llib_id=16

Other Technical Assistance. Contact the College of Education Instructional Technology Center at 859-257-7967. UK Information Technology Customer Service Center is available at http://www.uky.edu/UKIT/Help/ or 859-218-HELP (4357). You can also contact the Distance Learning programs for assistance at http://www.uky.edu/DistanceLearning/ Contact information for TASC http://www.ukyl.edu/TASC or 859-257-8272

Procedures to Resolve Technical Problems: Contact the UK Information Technology Customer Service Center at http://www.uky.edu/UKIT/ or 859-218-4357

GRADING
Note: The instructor reserves the right to adjust the grade scale, but only in the students favor.

Undergraduate Grade Break Down

Homework/Labs	150 points
Exams	300 points (100 points each)
Final Exam	150 points
Total	600 points

Undergraduate Grade Scale

A	537 – 600 points
B	477 – 536 points
C	417 – 476 points
D	357 – 416 points
E	0 – 356 points

Graduate Grade Break Down

Homework/Labs	150 points
Discussion Board Participation	55 points
Article Review Assignment	45 points
Exams	300 points (100 points each)
Final Exam	150 points
Total	700 points

Graduate Grade Scale

A	630 – 700 points
B	560 – 629 points
C	490 – 559 points
E	0 – 489 points

An "I" grade will be given only when a student is unable to complete the course for some reason that is outlined by university regulations.

Audit Credit

Students who enlisted for "audit" must complete courses readings, review presentations, and actively participate in class discussions. Failure to do so will result in a denial of audit credit and a grade of W.

Graduate students

Graduate students will be expected to complete all course assignments, along with undergrad students. Graduate students will also be expected to participate in discussion groups. In addition, graduate students are required to complete an Article Review assignment. Finally, graduate students may receive different exams than undergraduate students.

Note: Undergraduate and graduate students will be provided with a Midterm Evaluation of course performance.

COURSE POLICIES AND PROCEDURES

Learning/Classroom Accommodations. If you have a documented disability that requires academic accommodations, please make the request to the University Disability Resource Center. The center will require current disability documentation. When accommodations are approved, the Center will provide me with a Letter of Accommodation which details the recommended accommodations. Contact the Disability Resource Center (Jake Karnes, Director at 859-257-2754, email address: jkarnes@email.uky.edu).

Statement of Diversity. The course will be conducted with openness and respect to all individuals' points of view and experience. The activities and discussions will not tolerate discrimination or prejudice toward any person or group's religion, ethnicity, disability, gender, or sexual orientation.

Ethics. Students are allowed and strongly encouraged to discuss in pairs or groups the homework, but they are expected to turn in their own independent work which should be phrased in their own words and to complete exams independently.

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assessment (e.g., quiz, homework, exam, project) on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: http://www.uky.edu/Ombud. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Student Rights and Responsibilities* (available online http://www.uky.edu/StudentAffairs/Code /part2.html) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organizations, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiarism. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Submission of Work. All course work are due on the dates specified in the course schedule listed on Canvas. *LATE ASSESSMENTS WILL BE ACCEPTED AT THE SOLE DISCRETION OF THE INSTRUCTOR.* Exceptions will be made ONLY in extreme circumstances, such as (but not limited to) an incapacitating illness or injury, or a death in the family. Since the course materials are posted on Canvas, events such as (but not limited to) vacation/travel plans, social obligations, or family gatherings do not constitute exceptions. If students must miss a scheduled task, they must notify me about the reason for the absence before it occurs. In the event of emergency absences (e.g., personal illness, major accident, death of family member), students should notify the instructor as soon as possible, preferably through e-mail communication. Additional assessments may be required for missed tasks.

Attendance and Absences. Although this is an asynchronous online course, attendance is taken for the purpose of student accountability. Attendance is counted through participation in weekly assignments. Failure to participate (when assigned to be completed) will be considered an unexcused absence. Having six absences, whether excused or unexcused, will result in removal from the course.

Part II, Section 5.2.4.2. (http://www.uky.edu/StudentAffairs/Code/part2.html) of the Student Rights and Responsibilities defines the expectations regarding excused absences. I do have the right to request verification regarding excused absences.

Excused absences include (as defined at the web site above):
- Significant illness of student or serious illness of household member or immediate family
- Death of a household member or immediate family
- Trips for members of student organizations, class excursions or participation in intercollegiate athletic events
- Religious holidays (see http://www.uky.edu/Ombud/ForFaculty_ReligiousHolidays.php)
- Any other circumstance that the instructor finds reasonable cause for nonattendance

Students with excused absences will have a week to complete any missed assignments from the day they return to class. If a student misses an exam due to an excused absence, it is the student's responsibility to schedule a time with the instructor to make up the exam in the following week.

Incomplete Grade. Incomplete grades for this course are issued reluctantly and sparingly. The university permits students one calendar year—unless a shorter time frame is determined mutually by the student and instructor—to remove an "I" grade. If the contracted work is not completed satisfactorily, the "I" grade converts automatically to an "E" (a failing mark). UK rules require students requesting an "I" grade to complete a contract specifying how and when the "I" will be removed within the calendar year. The contract must be submitted to the course instructor before an "I" grade can be issued. Incomplete work and missing assessments will be assigned "E" grades if the student does not submit a completed Incomplete Grade Contract by the time the course ends.

Posting of Grades. All assessments will be graded and returned to students via Canvas. All assessment scores will be posted on Canvas in a timely manner so that students are aware of their progress in the course.

Group Work and Student Collaborative Policy. I encourage you to ask questions of one another and try to learn from one another when possible. Some activities in the course may include group work; in which case, turning in assignments in which you collaborated with student peers is acceptable, as long as the peer is credited on the assignment. However, turning in an assignment in which you collaborated with others, but were not specifically given the instruction to collaborate with others, will result in a "0" for the assignment. You are not permitted to collaborate with students on exams.

Behavior, Decorum and Civility. Please be respectful to others in the class and engage in civil discourse when we discuss topics that have a diversity of perspectives. Please minimize distractions by closing out other windows on your computer and not using other devices while you are engaged in the course.

Communication. The instructor will communicate on a regular basis via e-mail. You will be expected to check your e-mail (and blackboard) regularly for course related updates and information. If you need to communicate with the instructor, please use the title **557** in the subject line of your e-mail.

Class Participation via Discussion Board Threads/Forums. Due to the course format, schedule and content, participating in online discussion board threads is essential to your learning. Graduate students are required to participate (see above), and everyone is encouraged to do so. Ultimately, it is up to the undergraduate students on how you respond to the online discussions, but the more you participate the more you can learn from the course, the online community, and the instructor. Discussion Board threads/forums are available within the Canvas course by clicking on the link labeled Discussions. The aim of the Discussion Board is foster an online learning community for members of this class; students can email, text, or make phone calls to one another (when appropriate), and have face-to-face as well as online interactions with the instructor and teaching/lab assistant to keep the discussion going throughout the semester.

Maximum Timeframe for Responding to Student Communication: Students may expect the instructor, or the teaching/lab assistant to have responses to email, phone, and blackboard inquiries within 48 hours excluding weekends.

Changes to the Syllabus: I retain the right to modify this syllabus, if necessary, to meet the learning objectives of this course. Changes to the syllabus will be discussed with you and provided in writing as an addendum distributed electronically via e-mail and posted on the course Canvas. With these in mind, students are encouraged to review the course syllabus thoroughly and email their feedback (or concerns) to the instructor in order to determine how best to address such concerns as early as possible.

IMPORTANT DATES
See http://www.uky.edu/Registrar/AcademicCalendar.htm for summer session calendar, with key dates.
- See instructor website, www.uky.edu/~kdbrad2 for additional information, including useful links.

COURSE OUTLINE
I.   Introduction and Data Collection
       A. Introduction to Statistics
       B. Sampling
       C. Conducting a Study

II.   Descriptive Statistics
       A. Graphs and Tables for Univariate Data
       B. Numerical Descriptions for Univariate Data
       C. Bivariate Data
       D. Linear Correlation and Regression

III.   Probability

    A. Introduction to Probability
    B. Discrete Probability Distributions
    C. Continuous Probability Distributions

IV.   Inferential Statistics
    A. Sampling Distributions
    B. Confidence Intervals
    C. Hypothesis Testing

TENTATIVE COURSE SCHEDULE
The course schedule is presented on the next page. Students will be alerted to any adjustments to the schedule.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
August		27	28	29	30	31
Sections I. A. Introduction to Statistics						
September 1 Labor Day	2	3	4	5	6	7
Section I. B. and I. C. Sampling and Conducting a Study						
8	9	10	11	12	13	14
Exam 1						
15	16	17	18	19	20	21
Section II. A. Graphs and Tables for Univariate Data						
22	23	24	25	26	27	28
Section II. B. Numerical Descriptions for Univariate Data						
29	30	October 1	2	3	4	5
Section II. C. Bivariate Data						
6	7	8	9	10	11	12
Section II. D. Linear Correlation and Regression						
13	14	15	16	17	18	19
Exam 2						
20	21	22	23	24	25	26
Section III. A. Introduction to Probability						
27	28	29	30	31	November 1	2
Section III. B. Discrete Probability Distributions						
3	4	5	6		8	9
Section III. C. Continuous Probability Distributions						
10	11	12	13	14	15	16
Exam 3						
17	18	19	20	21	22	23
Section IV. A. Sampling Distributions						
24 **Section IV. B.** Confidence Intervals	25	26	27	28	29	30
		Thanksgiving Break				
December 1	2	3	4	5	6	7
		Section IV. B. Confidence Intervals			**Section IV. C.** Hypothesis Testing	
8	9	10	11	12	13	14
		Section IV. C. Hypothesis Testing			**Final Exam**	
15	16 **Final Exam**	17	18	19	20	21