Course Information

Date Submitted: 2/28/2013

Current Prefix and Number: SOC - Sociology , SOC 303 - QUANTITATIVE SOCIOLOGICAL ANALYSIS

Other Course:

Proposed Prefix and Number: SAME

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: College of Arts &Sciences

b. Department/Division: Sociology

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: Edward Morris

Email: ewmo222@uky.edu

Phone: 257-4413

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: N/A

b. Full Title: SOCIOLOGICAL RESEARCH METHODS II

Proposed Title: SAME

c. Current Transcript Title: QUANTITATIVE SOCIOLOGICAL ANALYSIS

1

Proposed Transcript Title: SAME

d. Current Cross-listing: none

Proposed – ADD Cross-listing :

Proposed – REMOVE Cross-listing:

e. Current Meeting Patterns

   LECTURE: 3

   Proposed Meeting Patterns

   LECTURE: 3

f. Current Grading System: ABC Letter Grade Scale

   Proposed Grading System: PropGradingSys

g. Current number of credit hours: 3

   Proposed number of credit hours:

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: This course focuses on the use of quantitative analysis techniques and software in social and behavioral research, covering such topics as univariate and bivariate analysis, parameter estimation, and hypothesis testing. Required for majors. Prereq: SOC 302 or PSY 215.

   Proposed Course Description for Bulletin: SAME

2j. Current Prerequisites, if any: Prereq: SOC 302 or PSY 215.

   Proposed Prerequisites, if any: SAME

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: The course is being proposed as a course in the UK Core Statistical Inferential Reasoning area.

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|SOC168|Patrick H Mooney|Dept approval for ZCOURSE_CHANGE SOC 303 (MINOR CHANGE)|20130118

SIGNATURE|BOSCH|Anna R Bosch|College approval for ZCOURSE_CHANGE SOC 303 (MINOR CHANGE)|20130118

SIGNATURE|SOC168|Patrick H Mooney|Approval resent to department for ZCOURSE_CHANGE SOC 303 (MINOR CHANGE)|20130122

SIGNATURE|RHANSON|Roxanna D Hanson|College approval for ZCOURSE_CHANGE SOC 303 (MINOR CHANGE)|20130215

General Education Course Approval Cover Sheet

Date of Submission 1/18/2013

1. **Check which area(s) this course applies to**

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	☐

2. **Provide Course and Department Information.**

Department: SOC

Course Prefix and Number: 303   Credit hours: 3

Course Title: Quantitative Sociological Analysis

Expected # of Students per Calendar Yr: 50-70   Course Required for Majors in your Program (check one)? Yes ☒ No ☐

Prerequisite(s) for Course? SOC 302

This request is for (check one) A New Course ☐   An Existing Course ☒

Departmental Contact Information

Name: Edward Morris   Email: ewmo222@uky.edu

Office Address: 1569 POT   Phone: 257-4413

3. **In addition to this form, the following must be submitted for consideration:**

- A syllabus that conforms to the Senate Syllabi Guidelines, including a mapping of the stated learning outcomes to those presented on the corresponding Course Template.
- A completed Course Review Form. See the Gen Ed website http://www.uky.edu/gened/forms.html for these forms. Proposals prepared prior to September 15th, 2010 are allowed to use a narrative instead of the Course Review Form.
- If applicable, a major course change form for revision of an existing course, or a new course form for a new course.

4. **Signatures**

Department Chair: _____   Date: _____

Dean: _____   Date: _____

All proposals are to be submitted from the College Dean's Office
Submission is by way of the General Education website http://www.uky.edu/gened

Course Review Form
Statistical Inferential Reasoning

Course: SOC 303

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:
This learning outcome will be addressed in lectures, in-class activities, homework, exams, and Data Analysis Problems during Week 4, Week 5, Week 6, and Week 7 on the syllabus. See also Appendices A and B.

Brief Description:
Over a period of four weeks in lecture, students will learn about inferential statistics, including the normal curve, the sampling distribution, Central Limit Theorem, point estimates, confidence intervals, standard errors, and Z scores. The material will focus both on theoretical and mathematical concepts and on the practical implications of risk quantification for evaluating numerical evidence. For example, a hands-on in-class activity using M&Ms to replicate a sampling distribution is conducted in Week 6 (see Appendix A). Then, in a homework assignment in Week 7, students must apply what they've learned about inferential statistics to describe and evaluate claims relating to global health and development made in a 20-minute TED talk by a reknowned scholar (See Appendix B).

☐ 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:
This learning outcome will be addressed in lectures, in-class activities, homework, exams, and Data Analysis Problems during Week 8, Week 9, Week 11, Week 12, and Week 13. See also Appendices C and D.

Brief Description:
Over a period of five weeks in lecture, students will learn about the null hypothesis and hypothesis testing for one and two samples and at different levels of measurement. In addition to learning how to conduct hypothesis tests and use hypothesis testing in the context of scientific research, they will also learn to use articulate the meaning and importance of hypothesis testing for understanding social patterns and problems in society and in their own lives. For example, we discuss what it means, both for gender groups and individuals, that men and women differ significantly in their average salary, controlling for other variables. Students are also asked to articulate and interpret formal hypothesis tests and then discuss the implications of those findings and some possible mechanisms underlying them (see Data Analysis Problems 2 and 3 in Appendix C and D, respectively).

☐ 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:
These learning outcomes are addressed throughout the semester in relation to nearly all of the material covered in the course. However, these issues are explicitly addressed in Week 1, Week 2, Week 3, Week 14, Week 15, and Week 16. See also required readings (articles, p. 2 of syllabus) and Appendices E and F.

Brief Description:
Over the course of the semester, students are pushed to improve their statistical literacy and ability to understand and use charts, graphs, and tables. For example, students are asked to read and interpret statistical findings presented in graphs and tables in social science research (see required articles on p. 2 of the syllabus). Students are also taught to recognize misuse of statistics in the media and everyday life. For example, students read Freedman's article, "Statistical Models and Shoe Leather," in which the author identifyies and describes misuse of statistics in top sociology and political science journals. In the context of these, the author argues that the necessary assumptions of statistical models are almost never met, causality is nearly impossible to establish, and that more detailed data collection procedures are of paramount importance. In in-class and homework assigments, students are pushed to recognize misinterpretation and reporting of statistics in the context of persuasive arguments, and to be able to describe how they know that statistics are being used inappropriately (see Appendix E). Students also learn to distinguish correlation and causation, and to articulate the importance of confounding effects (see Appendix F).

☐ 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:
Proportions of the course dedicated to various topics are based on 15 weeks of class, not including the final exam. Estimation is covered during Weeks 4-7 and Weeks 15-16 (six weeks, or 40% of the course). Statistical testing is covered during Weeks 8-13 (five weeks, or 33% of the course). Describing data is covered throughout the entire semester through required readings, Data Analysis Problems, and in-class activities. It is the main focus of the course during Weeks 1-3 and Week 14 (four weeks, or 27% of the course). Information literacy is also covered throughout the entire course, and is addressed in nearly every lecture as it applies to the statistical concepts or methods being discussed that day. At least 5% of the course is devoted to information literacy, though perhaps closer to 15% of in-class and homework assignments address this topic.

Brief Description:
As noted in the syllabus, the course is organized into three broad sections: 1) univariate statistics, including charts, graphs, and tables; 2) inferential statistics; and 3) bivariate statistics. These correspond roughly to describing data, estimation, and statistical testing, respectively. Information literacy, and also describing data, are addressed throughout the course. You can clearly see evidence of these in the in-class assignments, homework, and Data Analysis Problems provided as evidence that learning outcomes are addressed (see Appendices).

☐ 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:
See Appendices. These are conceptually focused rather than focused on computation and demonstrate the importance of statistical inference in everyday life.

Brief Description:
Assessable artifacts focus on using numerical evidence and reasonable statistical inference to make decisions about everyday life, including weighing the validity of information provided by others. Statistical inference is related to issues like political rhetoric and voting, understanding causes versus correlations of social problems and patterns, decision-making in education and family life (i.e. topics of importance to students), and being informed consumers of news media.

☐ 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:
See Appendices. All assignments provided as Appendices and most assignments in the course are focused on conceptual understanding and broad interpretation of statistics rather than computation.

Brief Description:
Students learn to compute (by hand using formulas) all of the descriptive statistics and most of the inferential and bivariate statistics covered in the course. They also learn to compute these using the software program, SPSS. However, the majority of the lectures and nearly all assignments are conceptually focused. Although the Data Analysis Problems do require students to compute statistics using SPSS, the greater weight is placed on deciding which statistics are appropriate to answer a given question, how to interpret those statistics, coherent presentation of statistical evidence, and thinking critically about mechanisms underlying patterns in the data.

Reviewer Comments:

Sociological Research Methods II: Quantitative Research Methods
SOC 303, Section 001, 11:00-12:15 T/R, 1506-POT
Spring 2010

Course Instructor: Dr. Brea Perry, Ph.D.
Office: 1527 Patterson Office Tower
Office Phone: 257-4416
Office Hours: By appointment
Mailbox: 1543 Patterson Office Tower
E-mail: breaperry@uky.edu

COURSE DESCRIPTION

Welcome to Sociological Research Methods II. SOC 303 is the second course in the required methodology sequence for Sociology majors. In Sociology 302, you were introduced to the sociological research process, including research design, sample construction, and data measurement. This course builds upon SOC 302 by familiarizing you with statistical and inferential procedures in the analysis and interpretation of data.

The course is organized into three sections. The first section focuses on univariate analyses (the examination of one variable). The second section addresses inferential statistics (analyses that allow us to estimate population characteristics from a sample and test hypotheses). The third section of the course deals with bivariate analyses (relationships between two variables). Throughout the course, we will also learn to read and evaluate common claims made using verbal and visual presentation of data.

Though some mathematical formulas are presented in lectures and in the text, the focus of this course is on the *interpretation* of statistics commonly used by social scientists, policymakers, and the news and popular media. To aid in interpretation, students will learn the basics of the computer program SPSS ("Statistical Package for the Social Sciences").

This will be a demanding course. In order to do well, it is critical that you keep up with readings, attend every class, work hard on assignments, and complete review problems prior to exams.

COURSE OBJECTIVES

The overarching goal of this course is to increase students' ability to evaluate the efficacy of claims based on statistical constructs and to understand and articulate important risks that these claims often address. Students will learn to accomplish this goal both through the formal science of statistical inference and through the informal activity of human inference. By the end of the course, students will be able to:
- Understand basic principles of sampling and measurement and identify common problems that lead to biased data
- Present, interpret, and evaluate data through graphic and numeric tools

1

- Create estimates and make inferences about a population based on a sample
- Assess statistical claims using information about sampling variability, margins of error, and confidence intervals
- Present and evaluate the strength and statistical significance of associations between two variables using null hypothesis testing
- Distinguish correlation and causation, and propose reasonable explanations for relationships between variables

REQUIRED TEXTS

BOOK: Healy, Joseph. 2007. *Statistics: A Tool for Social Research, 8th edition*

ARTICLES:

Erikson, Robert S. "The advantage of incumbency in congressional elections." *Polity* 3:395-405.

Freedman, David A. 1991. "Statistical models and shoe leather." *Sociological Methodology* 21:291-313.

Furlong, Andy, Andy Biggart and Fred Cartmel. 1996. "Neighbourhoods, opportunity structures, and occupational aspirations." Sociology 30:551-65.

Guyatt, Gordon H. et al. 2008. "What is "quality of evidence" and why is it important to clinicians?" *British Medical Journal* 336:995.

Herring, Cedric. 2009. "Does diversity pay? Race, gender, and the business case for diversity." *American Sociological Review.*

Hout, Michael and Andrew Greeley. 1998. "What church officials' reports don't show: Another look at church attendance data." *American Sociological Review* 63:113-19.

Marsden, Peter. 1987. "Core discussion networks of Americans." American Sociological Review 52:122-31.

Martin, Karin. 2009. "Normalizing heterosexuality: Mothers' assumptions, talk, and strategies with young children." *American Sociological Review.*

Stults, Brian J. and Eric P. Baumer. 2007. "Racial context and police force size: Evaluating the empirical validity of the minority threat perspective." *American Journal of Sociology.*

COURSE REQUIREMENTS

READING QUANTITATIVE SOCIAL SCIENCE: Each week there will be assigned readings. These will be incorporated into class discussions and will be covered on exams. In addition to readings from the text book, we will read empirical articles that apply the methods we are learning in class. These are denoted on the course schedule by the author's last name. The purpose of this exercise is to provide models demonstrating how various statistical techniques

are used and presented in published social science research. For each article, you are expected to be able to: 1) Identify the research questions being addressed; 2) Draw conclusions from the presentation of results; and 3) Evaluate the statistical and inferential claims being made by the authors. Readings are to be completed for the day they appear on the course schedule.

IN-CLASS ACTIVITIES: You will be required to complete assignments during class based on assigned readings or in-class activities. These will be turned in for a grade at the end of class. These may require the use of a calculator, so please bring one to class every day. **If you are absent for an in-class assignment, you receive no credit (nor may it be made up).**

EXAMS: There will be four exams throughout the semester. They will consist of some combination of multiple choice, problem solving, and short essays, and will be heavily dependent on the readings. Missed exams will result in a zero. Make-up exams will not be given, except in the most unusual (and **documented**) circumstance. If you will be absent during an exam, you must contact me **prior** to class. Failure to do so will mean that you will not be able to take a make-up. Should an emergency come up on the day of an exam, you must e-mail or call my office **before** class and, with my permission, may take a different exam at a later date.

HOMEWORK PROBLEMS: Many of the concepts and statistical techniques covered in this course are difficult at first, and require practice to master. At most class meetings, I will assign a few homework problems for you to complete. These will be due at the beginning of the next class period. Failure to turn in homework **at the beginning of class** will result in a zero for that assignment.

DATA ANALYSIS PROBLEMS: Each student is required to complete three Data Analysis Problems (DAPs), which ask you to analyze, interpret, and evaluate data using SPSS and the statistical and inferential tools being learned in class. These are due **at the beginning of class** on the date specified in the course schedule. Late DAPs will result in a 15% penalty for each day they are late (failure to turn in a DAP on time will also result in a 15% penalty, even if it is turned in the same day). Not having access to labs is not a valid excuse for late work, so I suggest you begin working on DAPs well in advance of the due date. **E-mail submissions will not be accepted. In addition, all writing and SPSS output must be printed from a word processing document – no handwritten work will be accepted.**

LAB: I have reserved the SOCLAIR computer lab (1506 Patterson Office Tower) for lecture and lab sessions. We will meet in SOCLAIR rather than in our regular classroom for the rest of the semester. When other classes are not in session, you may use the lab for completing DAPs.

GRADING

Exams (4):	40% (10% each)		
DAPs (3):	45% (15% each)		
Homework problems:	5%		
In-class assignments:	10%		

A	90-100%	C	70-79%	E	59% or below
B	80-89%	D	60-69%		

Attendance and participation will be used to determine borderline grades.

CLASS POLICIES

PUNCTUALITY: I expect all students to attend class regularly and to be on time. Entering and leaving the classroom during a lecture or lab is disruptive to the professor and other students. Persistent tardiness without a valid excuse may result in a penalty to your grade. Likewise, if you must leave class early for a legitimate reason, please notify me before class begins.

ATTENDANCE: If you miss a class, you are responsible for the material covered and all announcements made in class. Consistent attendance is directly related to higher grades. Course work and in-class assignments missed due to unexcused absences may not be made up. Excused absences include those considered legitimate by the UK Faculty Senate, and may be made up as long as the professor is notified in advance or (for emergencies) within 48 hours of the absence.

SPECIAL NEEDS: Students with special needs that might impact their ability to complete the course should inform me as soon as possible. I will do my best to accommodate these needs.

CELL PHONES: Please silence cellular phones or turn them off prior to class. Phone calls and text messaging will not be permitted. I reserve the right to ask you to leave if you are caught using a cell phone or if your phone rings during class.

ACADEMIC DISHONESTY: Any students suspected of cheating, submitting work that is not their own, or engaging in any form of academic misconduct will be reported to the Department Chair. Penalties for these academic offenses could include an E in the course or suspension/expulsion from the University. **Please note that working with others on DAPs (including running analyses) is considered cheating,** and will not be tolerated.

The Department of Sociology takes plagiarism and cheating seriously. 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 a question of plagiarism involving their 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, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be published article, chapter of a book, a paper from a friend or from the internet, etc. 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.

Cheating is defined by its general usage. It includes, but is not limited to, the wrongfully giving, taking, or presenting any information or material by a student with the intent of aiding himself/herself or another on any academic work which is considered in any way in the determination of the final grade. The fact that a student could not have benefited from an action is not by itself proof that the action does not constitute cheating. Any question of definition shall be referred to the University Appeals Board. [US: 12/12/05]

4

COURSE SCHEDULE

Note: This is a tentative schedule, and I reserve the right to alter it with sufficient notice.

Date	Topic	Readings
Week 1 Jan 14	Statistics in the social sciences Quantitative data and analysis	Healey Ch 1
Week 2 Jan 19, 21	Basic descriptive statistics Charts, graphs, and tables	Healy Ch 2 Martin
Week 3 Jan 26, 28	Central tendency Dispersion	Healey Ch 3 & 4 Marsden
Week 4 Feb 2, 4	**Exam 1 (Ch 1-4) – Feb 2** The normal curve	Healey Ch 5
Week 5 Feb 9, 11	Z-scores Open lab session	Healey Ch 6 Guyatt
Week 6 Feb 16, 18	Inferential statistics Estimation procedures I **DAP 1 Due – Feb 16**	Healey Ch 7 Erikson
Week 7 Feb 23, 25	Estimation procedures II **Exam 2 (Ch 5-7) – Feb 25**	Healey Ch 8
Week 8 Mar 2, 4	Hypothesis testing: One sample Hypothesis testing: Two samples I	Healey Ch 9 Hout
Week 9 Mar 9, 11	Hypothesis testing: Two samples II ANOVA	Healy Ch 10
Week 10	**SPRING BREAK**	
Week 11 Mar 23, 25	Chi square I Chi square II	Healy Ch 11 Furlong
Week 12 Mar 30, Apr 1	**Exam 3 (Ch 8-11) – Mar 30** Open lab session	Healey Ch 12
Week 13 Apr 6, 8	Bivariate Association (nominal/ordinal) **DAP 2 Due – Apr 6**	Healey Ch 13 Stults
Week 14 Apr 13, 15	Scattergrams Correlation	Healey Ch 14
Week 15 Apr 20, 22	Correlation and causation Regression	Healey Ch 15 Freedman
Week 16 Apr 27, 29	Regression Open lab session	Herring

| Week 17
May 4 | DAP 3 Due – May 3 @ noon
Exam 4 (Ch 12-15) – May 4 @ 10:30am | |