Course Syllabus
University of Kansas
Graduate Program in Urban Planning
Fall 2016
9:00-10:15 a.m. Monday and Wednesday
LOCATION: Marvin 308

UBPL 741: Quantitative Methods I

Instructor:

Ward Lyles
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OFFICE HOURS: Monday and Wednesday 12:00-1:00 and by appointment. I am very flexible for meeting, so definitely email to request a meeting anytime you need to talk.

Course Summary:

UBPL 741 is the first half of a two-part series (with UBPL 742) that introduces students to the application of quantitative social science research methods to policy-oriented studies in the field of urban planning. For Urban Planning Masters Students, UBPL 741 is a required core course.

Learning Objectives:

The primary purposes of this course are to 1) develop literacy in quantitative research methods, 2) provide a foundation of knowledge and skills for the application of quantitative research methods, and 3) develop familiarity with the design and administration of surveys. Upon completing the course, students will be able to critically evaluate and extract knowledge from planning reports, peer-reviewed articles, and books to better inform practice. They will be able to conduct basis statistical analyses of quantitative data in MS Excel and design and implement an internet-based survey.

Prerequisites:

There is no prerequisite for the course.

Readings:

All readings are available through the course blackboard page except the two required textbooks:
Social Statistics for a Diverse Society, Sixth Edition by Chava Frankfort-Nachmias and Anna Leon-Guerrero (2011)
Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method by Don A. Dillman, Jolene D. Smith and Leah Melani Christian (2008)

Format:

The format of the course is based on the principles of Team-Based Learning (TBL), which is an approach to collaborative learning that motivates students to hold themselves and each other accountable (see Michaelson, Knight and Fink 2004 or Sibley and Ostafichuk 2014 for more information). It involves strategically ordered individual work and teamwork with immediate feedback. TBL shifts the focus of classroom time from the instructor conveying course concepts to the **application of course concepts** by student learning teams.

Modules

The course is designed around seven modules that address:

1. Research Design and Ethics
2. Data Collection and Graphic Representation
3. Survey Design and Administration
4. Measures of Central Tendency and Measures of Dispersion
5. Normality, Estimation and Hypothesis Testing
6. Measures of Association and Significance Testing

Readiness Assurance Process (RAP)
For each of the modules, students will acquire fundamental knowledge through readings completed before the module begins (Required Readings.) Students will be held accountable for their preparation through the completion of a Readiness Assurance Process (RAP) on the first day of the module. The RAPs will proceed as follows:

1. READING: Students read required materials prior to class.
2. INDIVIDUAL READINESS ASSURANCE TEST: Each student will complete an in-class test with 5-10 multiple-choice questions covering assigned readings. These tests hold students accountable for acquiring foundational knowledge from the readings that will prepare them for team problem solving in subsequent classroom time.
3. TEAM READINESS ASSURANCE TEST: Each team will then complete the same test that was completed by individual students. By the time of completion of the team test, every student will know the correct answer to every question.
4. DISCUSSION: The instructor will facilitate a discussion of test questions that were most problematic for individual students and teams, and of the assigned readings for the day.

In-Class Applications
Following the RAP (which we'll complete at the beginning of each module and also at the end of the semester), the bulk of class time will be used to practice applying knowledge from readings in a series of team application exercises that will require teams to discuss and solve relevant, significant problems. The exercises will be based on the following 4 S's:

1. SIGNIFICANT PROBLEM: problems are intended to be interesting and relevant, requiring students to use course concepts to solve them.
2. SAME PROBLEM: each team will be given the same problem.
3. SPECIFIC CHOICE: each team will be required to make a specific choice among a specified set of solutions.
4. SIMULTANEOUS REPORT: each team will report its choice simultaneously for other teams to view.

Following the simultaneous reporting process, time will be allocated for discussion across teams that will center on why teams made the decisions they made, what factors they considered, and what is most important to learn from the exercises. In some cases, teams will be required to submit written products from the exercises for credit. While there will be no required readings for the in-class exercises, resources will be made available before the exercises and groups may find it beneficial to review the materials before class meets.

Grading:

Grades will be calculated based on the following components. Together, we will decide on the weighting of components on the first day of class. We will use a structured exercise to choose weights to assign to each of the following grading components. Each of the weights will be constrained within the percentages shown below.

	Percentage
1) Individual Performance	55%
a) Class attendance and attentiveness	10%
b) Readiness assurance tests	10%
c) Assignments	10%
d) Homework and Semester Project	25%
2) Team Performance	25%
a) Readiness assurance tests	25%
3) Team Maintenance	20%
a) Peer Evaluation	20%

Course Due Dates:

Readiness assurance test dates: 8/29, 9/19, 10/17, 10/26, 11/14
Homework due dates: 9/10, 9/27, 10/8, 10/22, 11/27
Assignment due dates: 9/14, 10/4, 11/5, 11/21, 12/3

Incompletes

The Faculty Handbook (F-6) outlines the Grade of Incomplete in the following way:
"The Grade of I should not be used when a definite grade can be assigned for the work done. It shall not be given for the work of a student in any course except to indicate that some part of the work has, for good reason, not been done, while the rest has been satisfactorily completed" (emphasis added).

Academic Misconduct

Students should be aware of the University rules regarding academic misconduct (which includes plagiarism). These may be found at: https://documents.ku.edu/policies/governance/USRR.htm#art2sect6

Students with Disabilities

Any student who has a disability that may prevent the fullest expression of abilities should contact me personally as soon as possible so that we can discuss accommodations necessary to ensure full participation and to facilitate the educational opportunity.

Religious Holidays

If any scheduled assignment or exam conflicts with a mandated religious observance, a student should contact me immediately to arrange a make-up assignment or exam on a mutually acceptable date.

KU Writing Center

The KU Writing Center offers a variety of service to help students improve their writing. Check out their web site at: http://www.writing.ku.edu/. You can receive peer consulting on your work, as well as on-line feedback to work submitted via email. They are a great resource, so please check them out!

Attendance

In a team-based class, attendance is essential for individual, team, and class success. Because unexpected situations do arise, one unexcused absence will not be penalized. However, an escalating scale will be used for 2, 3 or more absences. That is, the more classes one misses, the greater the deduction on the final grade for each missed class. This policy is used to prevent situations whereby teams cannot function because of individual absences.

Course Schedule:

The following schedule is subject to change. Notification will be provided as soon as possible regarding any changes.

COURSE INTRODUCTION

M 8/22 Course Overview, Team Formation, Semester Project Introduction

Reading:

- Complete one of the free online Meyers-Briggs tests and be ready to share your personality type with your teammates on Wednesday. A couple of site at which you can take the test and learn how to interpret your results are: (http://www.16personalities.com/free-personality-test and http://www.truity.com/test/type-finder-research-edition)
- Katzenbach, J.R. and D.K. Smith. 2003. The Wisdom of Teams (Chapter 3). New York, NY: Harper Business Essentials.

W 8/24 Syllabus RAP, Personality Type Review, Semester Project Overview, Excel Self-Assessment and Tutorial

MODULE 1: RESEARCH DESIGN

Topics to be covered in Module 1 include:

1. Quantitative Research and Causality
2. Experiments, Quasi-Experiments, and Non-experimental Designs
3. Data and Levels of Measurement

Learning objectives for Module 1 include being able to:

1. Explain the general features and terminology of quantitative social science research
2. Restate the necessary conditions for establishing causality in relationships between and among variables
3. Identify, differentiate, and evaluate alternative design approaches for establishing causality in quantitative research
4. Identify independent and dependent variables and levels of measurement of variables

Readings:

- Quantitative Research and Causality
  - Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
    - Chapter 1 (pp. 1-20)
  - Lewis-Beck, M. S. (1995). Data analysis: An introduction. Thousand Oaks; London; New Delhi, Sage Publications
    - pp. vii, 1-8
  - Dane, F. C. (2011). Evaluating research: Methodology for people who need to read research. Los Angeles; London; New Delhi; Singapore; Washington D.C., Sage Publications, Inc.
    - pp. 1-12
- Experiments, Quasi-Experiments, and Non-Experimental Designs
  - Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). Experimental and quasi-experimental designs for generalized causal inference. Boston, New York, Houghton Mifflin Company.
    - pp. 1-7
  - Dane (2011)
    - pp. 161-5, 178-183, 197-9.

M 8/29 Readiness Assurance Process for Module 1

W 8/31 Team Application Exercise – Research Questions and Types of Research

M 9/5 No Class – Labor Day

W 9/7 Team Application Exercise – Research Design
- Reading before class: Jun, M. (2006). "The effects of Portland's urban growth boundary on housing prices." Journal of the American Planning Association 72(2): 239-240

S 9/10 ****** Homework 1 due on Blackboard (5:00 PM)**

M 9/12 Team Application Exercise – Research Ethics

W 9/14 Module 1 Homework Discussion / Semester Project Workday
****** Assignment 1:** complete IRB Certification before class – Email Ward Lyles pdf documenting completion (https://rgs.drupal.ku.edu/human_subjects_compliance_training)

MODULE 2: DATA, GRAPHIC REPRESENTATION, and SAMPLING

Topics to be covered in Module 2 include:
1. Organization and Information
2. Graphical representation of quantitative data
3. Sampling

Learning objectives for Module 2 include being able to:
1. Understand and apply concepts of frequency, percentage, proportions, and distributions
2. Identify, differentiate, and evaluate alternative approaches for selecting a sample from a population
3. Describe the types of variables that are available from the Census for different geographical units
4. Select an appropriate graphic method for representing quantitative data
5. Graphically represent quantitative data using Excel

Readings:
Organization of Information
- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 2 (pp. 27-45)

Graphic Representation
- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 3 (pp. 63-83)

Sampling
- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 7 Part I (pp. 196-205)

M 9/19 Readiness Assurance Process for Module 2

W 9/21 Team Application Exercise – Data and Graphic Representation

M 9/26 Team Application Exercise – Sampling
- Before class: Bunnell, G. and E. Jepson. (2011). " The Effect of Mandated Planning on Plan Quality: A Fresh Look at What Makes a 'Good Plan'." Journal of the American Planning Association 77(4). Read pages 338-346.
- Before class: Olonilua, Oluponmile O., and Olurominiyi O. Ibitayo. 2011. Toward multihazard mitigation: An evaluation of FEMA-approved hazard mitigation plans under the Disaster Mitigation Act of 2000. *Journal of Emergency Management* 9 (1). Read pages 37-41.
- Before class: Wheeler, Stephen M. 2008. State and municipal climate change plans. *Journal of the American Planning Association* 74 (4):481-483.

T 9/27 ****** Homework 2 due on Blackboard (5:00 PM)**

W 9/28 Module 2 Homework Discussion / Semester Project

MODULE 3: SURVEY DESIGN AND ADMINISTRATION

Topics to be covered in Module 3 include:

1. Developing survey questions and a questionnaire
2. Pretesting survey questionnaires and administration procedures
3. Contacting respondents to secure consent and promote survey responses
4. Tracking responses and using follow-up contacts to increase response rates

Learning objectives for Module 3 include being able to:

1. Select the appropriate survey mode for the population
2. Choose appropriate wording and visual presentation of survey questions
3. Create a survey in one or more of the common online tools (e.g. Qualtrics, SurveyMonkey)
4. Use pre-testing procedures to refine a survey questionnaire and administration procedures
5. Track response rates and use follow-up contacts to increase response rates
6. Administer a survey in one or more of the common online tools (e.g. Qualtrics, SurveyMonkey)

Readings:

- Dillman, D.A., J.D. Smith and L. M. Christian. (2008) Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method
    - pp. 22-29; 65-79; 105-106; 148-150; 151-229 (read the section introductions and skim the specific guidelines) 230-236; 270-298; skim 237-270;
- Fowler, F.A. (2009) Survey Research Methods. Sage Publications.
    - pp. 137-165

NOTE: NO RAP MODULE 3

M 10/3 Team Application Exercise – Survey Development (Semester Project Workday)

T 10/4 ****** Assignment 2 (MEMO) due on Blackboard (11:59 PM)**

W 10/5 Team Application Exercise – Pre-testing and Administering a Survey (Semester Project Workday) / Peer and Course Evaluation

F 10/8 ****** Homework 3 due on Blackboard (5:00 PM)**

MID-SEMESTER

M 10/10 No class – Fall Break

W 10/12 Mid-Term

MODULE 4: DATA EXPLORATION: MEASURE OF CENTRAL TENDANCY AND MEASURES OF DISPERSION

Topics to be covered in Module 4 include:

1. Measures of Central Tendency (mode, median, mean)
2. Measures of Dispersion (range, interquartile range, variance and standard deviation)

Learning objectives for Module 4 include being able to:

1. Interpret commonly-used univariate statistics and distributions
2. Calculate commonly-used univariate statistics and chart distributions using Excel

Readings

Measures of Central Tendency and Measures of Dispersion

- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapters 4 and 5 (pp. 94-121 and 132-156)
- Lewis-Beck (1995)
  - pp. 8-18

M 10/17 Readiness Assurance Process for Module 4

W 10/19 Team Application Exercise – Measures of Central Tendency

S 10/22 ** Homework 4 due on Blackboard (5:00 PM)**

M 10/24 Team Application Exercise – Measures of Dispersion

MODULE 5: DATA EXPLORATION: NORMALITY, ESTIMATION, AND HYPOTHESIS TESTING

Topics to be covered in Module 5 include:

1. Normality and Z-scores
2. Estimation and confidence intervals
3. Hypothesis Testing

Learning objectives for Module 5 include being able to:

1. Recognizing, describing and using the normal distribution; transforming raw scores into Z-scores
2. Understanding and utilizing the concept of estimation; estimating confidence intervals
3. Defining and applying the components of hypothesis testing

Readings:

Normality:

- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 6 (pp. 169-183)
- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 7 Part II (pp. 206-218)

Estimation:

- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 8 (pp. 227-239)

Hypothesis Testing:

- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 9 (pp. 256-276)

W 10/26 Readiness Assurance Process for Module 5

M 10/31 Team Application Exercise – Normality and Z-Scores

W 11/2 NO CLASS – Association of Collegiate Schools of Planning Conference

S 11/5 ** Assignment 3 due on Blackboard (5:00 PM)**

M 11/7 Team Application Exercise – Estimation and Confidence Intervals

W 11/9 Team Application Exercise – Hypothesis Testing / Semester Project Work Time

MODULE 6: DATA EXPLORATION: BIVARIATE RELATIONSHIPS AND MEASURES OF ASSOCIATION

Topics to be covered in Module 6 include:
1. Relationships between two variables (existence, strength and direction)
2. Measures of Association (Pearson's R correlation coefficient, tau, lambda)

Learning objectives for Module 6 include being able to:
1. Consider features of bivariate relationships to assess
2. Interpret commonly-used bivariate statistics
3. Calculate commonly-used measures of bivariate relationships using Excel

Readings:
Bivariate Relationships
- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 10 (pp. 304-320)

Measures of Association
- Lewis-Beck (1995)
  - pp. 19-30, 35-38
- Frankfort-Nachmias, C. and A. Leon-Guerrero. (2011). Social Statistics for a Diverse Society, 6th Ed. Los Angeles, Pine Forge Press.
  - Chapter 11 (pp. 338-349)

M 11/14 Readiness Assurance Process for Module 6

W 11/16 Team Application Exercise – Bivariate Relationships

S 11/21 ** Assignment 4 due on Blackboard (5:00 PM)**

M 11/21 Team Application Exercise – Bivariate Relationships

W 11/23 No Class – Thanksgiving Break

S 11/27 ** Homework 5 (Final project analysis) due on Blackboard (5:00 PM)**

M 11/28 Team Application Exercise – Chi-Squared

W 11/30 Team Application Exercise – Correlation

S 12/3 ** Assignment 5 due on Blackboard (5:00 PM)**

M 12/5 Module 6 Homework Discussion / Semester Project Workday / Catch-up

W 12/7 Peer Evaluation and Review for Exam

T 12/13 ** Semester Project due on Blackboard (11:59 PM – one minute BEFORE midnight) [HARD COPY 12/13 in Ward's box by 5:00 pm]**

F 12/16 7:30-10:00 AM - Final Readiness Assurance Process (Final Exam)