
**Graduate Program in Urban Planning
School of Architecture and Urban Design
University of Kansas**

UBPL 742
Quantitative Methods II
Spring, 2006
Classroom: 308 Marvin Hall
3 Credits

Professor Kirk McClure
Office: 317 Marvin Hall
(785) 864-3888
10:30-11:45 am Monday and Wednesday
Line Number 61649

COURSE SYLLABUS

INTRODUCTION AND OBJECTIVES

This course is a continuation of the UBPL 741: Quantitative Methods I course and is directed toward the study of more advanced forms of statistical analysis. In addition, projection methods and forecasting techniques will be covered, along with a brief introduction to Geographic Information Systems.

Periodic assignments will be required of each student. A final examination will be given at the end of the semester that will cover topics from both UBPL 741 and UBPL 742.

PREREQUISITES

Students must have successfully completed UBPL 741 in order to take this course or must have the permission of the instructor.

FORMAT

The format of the course is that of a series of lectures designed to supplement graduate level study. Each student must perform laboratory work using personal computers for the completion of the various course assignments. Students are expected to be prepared for and to engage in discussions on each topic covered in the course and to complete all assignments.

REQUIREMENTS, GRADING AND ACADEMIC MISCONDUCT

All assignments must be submitted by the due date and must meet normal, graduate level standards of work. Work submitted late, with the exception of prior arrangement, will be penalized. An answer sheet will be distributed for each problem set. Assignments submitted after the release of the answer sheet cannot be evaluated for a grade. Assignments cannot be accepted after the distribution of the answer sheets, which will usually be the class session after the due date.

The following weights will be used in the determination of a final grade in the course:

Curve Fitting Assignment	15 %
Cohort Survival	15 %
Analysis of Variance	15 %
Regression Assignment I	10 %
Regression Assignment II	10 %
Geographic Information Systems	10 %
Final Examination	25 %

Students should be aware of the University rules regarding academic misconduct and plagiarism. These may be found in the Student Handbook. While students are encouraged to work together in completing their studies for this course, the written work submitted must reflect the work of the individual student. Students who do not complete the work required in the course will be given a grade of I only where, for good reason, some part of the work has not been done while the remainder of the work has been satisfactorily completed.

SCHEDULE CONFLICTS and RELIGIOUS HOLIDAYS

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

RECORDING LECTURES

Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. On request, the instructor will usually grant permission for students to audio tape lectures, on the condition that these audio tapes are only used as a study aid by the individual making the recording. Unless explicit permission is obtained from the instructor, recordings of lectures and review sessions may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

DISABLED STUDENTS

Any student who, due to disability, may not be able to complete the requirements for the course should contact the professor as soon as possible so that accommodations can be made.

DISCLAIMER

This syllabus, the content of the course, the course assignments and the scheduling of the course are subject to change due to extenuating circumstances.

TEXTS RECOMMENDED

The textbooks for the course are those already acquired for use with UBPL 741:

Elifson, Kirk, Richard P. Runyon, and Audrey Haber, *Fundamentals of Social Statistics*, Third Edition, New York: McGraw-Hill, 1992.

(This is the text acquired for UBPL 741. This book is referred to as Elifson in the reading list.)

M. J. Norusis, *SPSS 11.0 Guide to Data Analysis*, Englewood Cliffs, New Jersey: Prentice-Hall, 2002.

(This book is designed for use with the SPSS/PC+ program version 11.0, which is very similar to Version 13 being used on the in Urban Planning Computer Laboratory. It can serve as a guide to the use of other versions of SPSS as well. This book is referred to as Norusis in the reading list.)

Students are encouraged to continue the use these books or to find other standard textbooks that will meet their needs.

SUPPLEMENTAL READINGS

The following text is recommended, but not required:

R. E. Klosterman, *Community Analysis and Planning Techniques*, Savage, Maryland: Rowman and Littlefield Publishers, Inc., 1990.

(This book is referred to as Klosterman in the reading list.)

The chapters from Klosterman's book that are needed for this course are available through electronic reserve.

Finally, several articles and reports are used as supplementary readings for the course. These readings have been placed on electronic reserve.

The Excel spreadsheet software will be used in the course. No specific text is required on this software as many different books are readily available in area bookstores. It is recommended that each student examine several of these books and, if necessary, acquire one that seems best suited to the student's abilities and taste.

TOPIC OUTLINE AND READING LIST**Lecture 1: Introduction to the Course**

- Topics: Course Contents and Requirements
Relationship of the Course to Planning Education and Practice
- Reading: Patton, Carl V. and David S. Sawicki. "Chapter 1: The Need for Simple Methods of policy Analysis and Planning," and "Chapter 2: The Policy Analysis Process," in *Basic Methods of Policy Analysis & Planning*, Englewood Cliffs, New Jersey: Prentice-Hall, 1986, pp. 1-39.

Lecture 2: Selection of Statistical Tools

- Topics: How to select the proper statistical tool
- Reading: None required. Review the introductory section of each chapter of Elifson to identify the types of data required for each type of statistical procedure.

Lectures 3 through 6: Bivariate Curve Fitting Techniques

- Topics: Models:
Straight Line
Geometric Rate
Least Squares Regression
Exponential
Modified Exponential
Logarithmic Regression
Polynomial Regression
Logistic
- Selection Criteria:
Least Squares
Bias
Fit of Assumptions
- Reading: Klosterman, Chapters 1, 2, and 3 and Appendix A.
Elifson, Chapter 10.

Lectures 7 through 9: Composite Projections

Topics: Cohort Survival
Decennial Cohort Survival

Reading: Klosterman, Chapter 4.

Hamilton, C. Horace and Josef Perry, "A Short Method for Projecting Population by Age from One Decennial Census to Another," *Social Forces*, Vol. 41, No. 2, 1962, pp. 163-170.

Lecture 10: Use of SPSS/PC+ for Microcomputers

Topics: Preparing a Data File in SPSS or in a Spreadsheet
Running SPSS/PC+ Version 6.1 and other versions
Creating New Variables
Generating Reports

Reading: Norusis, Chapters 1, 2, 4, 5, 6, 7, 8 and 9.

Lectures 11 through 14: Analysis of Variance

Topics: One-Way Analysis of Variance
Two-Way Analysis of Variance
Balanced versus Unbalance Cell Sizes

Readings: Norusis, Chapters 14 and 15.
Elifson, Chapter 15.

Lectures 15 through 23: Multiple Regression

Topics: Review of Bivariate Regression
Expansion to Multiple Regression
Residual Analysis

Reading: Norusis, Chapters 19, 20, 21, 22, 23 and 24.
Elifson, Chapter 11.

Lectures 24 and 28: Geographic Information Systems

- Topics: Definition of GIS
 Use of GIS on personal computers using MapInfo
 Database creation and maintenance
 Computer aided mapping
 Geocoding
 Printing a map and integrating a map into a report
- Reading: Huxhold, William E., "Chapter 3: Applications of Urban Geographic Information Systems," *An Introduction to Urban Geographic Systems*, New York: Oxford University Press, 1991, pp. 64-126, in the reader.
- Kent, Robert B. and Richard E. Klosterman, "GIS and Mapping: Pitfalls for Planners," *Journal of the American Planning Association*, Vol. 66, No. 2, Spring, 2000, pp. 189-198.
- Budic, Zorica D., "Effectiveness of Geographic Information Systems in Local Planning," *Journal of the American Planning Association*, Vol. 60, No. 2, Spring, 1994, pp. 244-263, in the reader.
- Drummond, William J., "Address Matching: GIS Technology for Mapping Human Activity Patterns," *Journal of the American Planning Association*, Vol. 61, No. 2, Spring, 1995, pp. 240-251, in the reader.
- Innes, Judith E. and David M. Simpson, "Implementing GIS for Planning: Lessons from the History of Technological Innovation," *Journal of the American Planning Association*, Vol. 59, No. 2, Spring, 1993, pp. 230-236, in the reader.

Lecture 29: Review

- Topics: Preparation for final examination
- Reading: None assigned.

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TIMETABLE

<i>Week</i>	<i>Session</i>	<i>Date</i>	<i>Course Topic</i>	<i>Lecture</i>	<i>Assignment Due</i>
1	1	23-Jan	Introduction	Course overview	
	2	25-Jan	Statistics:	Selection of Statistical Procedures	
2	3	30-Jan	Bivariate Curves:	Introduction, Straight Line, Geometric	
	4	1-Feb	Bivariate Curves:	Regression	
3	5	6-Feb	Bivariate Curves:	Logarithmic, Exponential, Mod. Expon	
	6	8-Feb	Bivariate Curves:	Polynomial 2nd & 3rd Order, Logistic	
4	7	13-Feb	Projections:	Cohort: Theory	
	8	15-Feb	Projections:	Cohort: Standard Model	Assignment 1 due
5	9	20-Feb	Projections:	Cohort: Decennial Model	
	10	22-Feb	SPSS/PC+	Use of the SPSS/PC+ program	
6	11	27-Feb	ANOVA:	One-way analysis of variance	
	12	1-Mar	ANOVA:	F-tests	Assignment 2 due
7	13	6-Mar	ANOVA:	Two-way analysis of variance	
	14	8-Mar	ANOVA:	Unequal cell sizes, interaction effects	
8	15	13-Mar	Regression:	Twelve Steps to Regression	
	16	15-Mar	Regression:	Theory of least squares models	Assignment 3 due
9		20-Mar	No Class	Spring Break	
		22-Mar	No Class	Spring Break	
10	17	27-Mar	Regression:	Theory of least squares models	
	18	29-Mar	Regression:	Model building	
11	19	3-Apr	Regression:	Model building	
	20	5-Apr	Regression:	Analysis of residuals	
12	21	10-Apr	Regression:	Analysis of residuals	
	22	12-Apr	Regression:	Dealing with Categorical data	Assignment 4 due
13	23	17-Apr	Regression:	Times Series Regression	
	24	19-Apr	GIS:	Introduction	
14	25	24-Apr	GIS:	Use of ArcMap	
	26	26-Apr	GIS:	Mapping	Assignment 5 due
15	27	1-May	GIS:	Data Files	
	28	3-May	GIS:	Geocoding	
16	29	8-May	GIS:	Thematic Maps	
	30	10-May	Review:	Statistics and Modeling	Assignment 6 due
17		12-May	Stop Day		
18		16-May	Comprehensive Final Examination	10:30 pm -1:00 pm Room 308 Marvin	