

**Syllabus**  
**AJ 720 – Quantitative Research in Administration of Justice**  
**Fall, 2009**  
**Mondays, 11:00 a.m. - 2:00 p.m.**  
**AKH # 124**

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**Course Description:**

As academic professionals, graduates of the Ph.D. program in Administration of Justice are not only expected to possess the knowledge and skills necessary to comprehend the empirical literature bearing on issues of crime and criminal justice, but to also have the ability to make informed decisions and policy recommendations based upon available data. The nature of this data is indeed exceedingly complex - numerous socio-demographic variables are related in some form or fashion to the problem of crime. Multivariate statistical techniques provide criminal justice researchers and policy makers with the ability to scientifically decipher the interrelationships between these otherwise difficult to understand variables. Consequently, attention will be given in this course to several areas, not the least of which is first developing an understanding of which multivariate technique is most appropriate given the research question at hand. Once this knowledge base has been firmly established, students will then be exposed to the fundamental assumptions and analytic concepts underlying each technique, followed by technical specifications and procedures for the estimation of each model. Attention will also be given to correctly interpreting the derived statistical output as well as being able to distinguish between statistical and practical significance.

By the end of the semester, students will be able to demonstrate professional competency in each of these substantive areas as assessed through performance on written examinations and preparation of weekly assignments. Students will also be required to conduct applied statistical analyses involving actual criminal justice data. In meeting these standards, successful students will be able to: 1) Intelligently formulate research questions; 2) Determine which technique is most appropriate; 3) Assess the extent to which its assumptions are met by the data; 4) Estimate the model, and; 5) Interpret the derived results in plain language that is easily understood by the public, other criminal justice professionals, and social policy makers.

**Prerequisites:** Students must successfully pass AJ 625 before enrolling in this course.

**Course Objectives:**

- ❑ To familiarize students with the various multivariate data analysis techniques commonly applied to the empirical study of criminal justice administration (Multiple Regression, Multiple Discriminant Analysis, Logistic Regression, Path Analysis, Structural Equation Modeling, Survival Analysis, etc.);
- ❑ To help students determine which multivariate data analysis technique is most appropriate for answering the research question of interest (Exploratory versus Confirmatory, Nature of the Data, Model Parsimony);

- ❑ To provide students with a detailed understanding of the fundamental assumptions and analytic concepts underlying each multivariate data analysis technique (Statistical versus Functional Relationships, Linearity, Homo versus Heteroscedasticity, Error Term Normally Distributed & Uncorrelated, Multivariate Normality, Absence of Multicollinearity, etc.);
- ❑ To explain to students the procedures and stages associated with estimating each multivariate data analysis technique, assessing fit, interpreting the variate, and validating the model);
- ❑ To equip students with the knowledge and ability necessary to interpret both the statistical and practical significance of results derived from various multivariate statistical techniques (Plain Language Interpretation Skills);
- ❑ To familiarize students with the limitations of each estimation technique and the procedures associated with validating the derived model (Limitations on generalizability, estimation versus holdout samples);
- ❑ To equip students with the advanced technical skills and intellectual abilities necessary for competently executing those multivariate statistical models directly relevant to the empirical study of criminal justice administration.

### **Students' Skills at the Completion of the Course:**

Upon successful completion of the course, the student should not only be capable of interpreting the research literature which makes use of the following multivariate statistical models, but be confident in correctly applying these techniques to the types of empirical questions they are designed to answer. The multivariate statistical models to be introduced in this course include:

- ❑ Multiple Regression
- ❑ Multiple Discriminant Analysis (two and three groups)
- ❑ Logistic Regression (tentative)

### **Important Note:**

Successful completion of this course does not automatically imply or otherwise guarantee passage of comprehensive examinations. In other words, just because you make a passing grade in this course does not mean that you will know everything that might appear on a comprehensive exam or that your quality of work in this course will pass muster for purposes of later competency tests.

### **Required Text:**

Hair, J.F., et al. (2006). Multivariate Data Analysis with Readings (5<sup>th</sup> ed.). New Jersey: Prentice Hall.

### **Additional Readings:**

Mendenhall, W. & Sincich, T. (2003). A second course in statistics: Regression analysis (6<sup>th</sup> ed.). New Jersey: Prentice Hall.

Long, J.S. (1997). Regression models for categorical and limited dependent variables. Thousand Oaks, CA: Sage.

Demaris, A. (1992). Logit modeling: Practical Applications. Thousand Oaks, CA: Sage.

Liao, T.F. (1994). Interpreting probability models: Logit, probit and other generalized linear models. Thousand Oaks, CA: Sage.

Menard, S. (2002). Applied logistic regression analysis (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage.

Pampel, F.C. (2000). Logistic regression: A primer. Thousand Oaks, CA: Sage.

Borooah, V.K. (2002). Logit and probit: Ordered and multinomial models. Thousand Oaks, CA: Sage.

Allison, P. (2001). Missing data. Thousand Oaks, CA: Sage.

Jacoby, W. (1998). Statistical graphics for visualizing multivariate data. Thousand Oaks, CA: Sage.

Berry, W. (1993). Understanding regression assumptions. Thousand Oaks, CA: Sage.

Fox, J. (1991). Regression diagnostics: An introduction. Thousand Oaks, CA: Sage.

### **Course Requirements:**

The final grade for this course will be based upon the student's performance on three measures. Two of these will be examinations administered as a midterm (33.3%) and final (33.3%). A third measure will involve completion of several out-of-class statistical "write-ups" (33.3%). Each examination will be composed of two parts. Part I will include essay questions on the theory underlying the various multivariate techniques. Part II will involve interpretation of computer output of various techniques. In addition, the student will be assigned problems each week to help develop proficiency in statistical analysis and interpretation. The assigned problems are due at the beginning of the following class meeting.

No make-up exams will be offered unless the student contacts the instructor prior to the test date. In the event that a make-up is required, the instructor reserves the right to change the format of the exam, either in whole or part.

During the exam, all materials, purses and book bags are to remain closed directly under the student's seat. Once the test is distributed, no one will be allowed to enter or leave the room unless they are completely finished with the test and have submitted it to the instructor. Any talking between students once the first test has been distributed will be considered a prima-facie case of cheating and will result in a grade of zero (0) being assigned to those involved for the test. Students who arrive to class late after the test has been distributed will not be allowed to enter the room or take the exam.

## **Attendance Policy and Classroom Behavior:**

Successful learning and understanding requires regular attendance and active participation in class discussions. Attendance will be taken regularly using a variety of methods including, but not limited to, roll call, sign-in sheets and pop quizzes. Since quizzes are intended to reward attendance, they may not be made up if missed. It is understood that, due to circumstances beyond the student's control, absence from class may be unavoidable. In the event that a student must miss class, (s)he is expected to contact the instructor prior to the scheduled class meeting. The instructor may require students to provide documentation pertaining to the absence. Each student is expected to be in the classroom ready to begin class on time and remain until the end of the session. If the student is unable to meet this expectation, (s)he will be counted as absent for the day unless the instructor is notified in advance and approval is given. *Students who accumulate more than one unexcused absences during the semester will receive a one-letter deduction from the final course grade for each unexcused absence thereafter.* Conversely, those students who attend class regularly and make meaningful contributions to classroom discussion will be considered eligible to receive full credit for this portion of the final grade. Students are referred to the University's policy regarding class attendance in the *Student Guidelines*.

Private conversation between two or more students during class time is often considered impolite and disruptive behavior. In the event that private conversations reach such a point, the students will be required to leave the classroom and recorded as absent that day.

Students will observe the College's policy prohibiting food, drinks, or tobacco products in the classroom.

No cellular phones or pagers will be allowed in class.

The use of recording devices in class is prohibited unless instructor approval is obtained in advance.

Students are strongly encouraged to arrive to class on time and not leave until dismissed by the instructor.

## **Grading Scale**

100 - 90	A
89 - 80	B
79 & Below	F

## **Academic Honesty:**

The University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action.

The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating, plagiarism, collusion and the abuse of resource materials.

“Cheating” includes: 1) Copying from another student's test paper, laboratory report, or computer files, data listings, and/or programs; 2) Using, during a test, materials not authorized by the person giving the test; 3) Collaborating, without authorization, with another student during an examination or in preparing academic work; 4) Knowingly, and without authorization, using, buying, selling, stealing, transporting, soliciting, copying, or possessing, in whole or in part, the contents of an unadministered test; 5) Substituting for another

student, or permitting another student to substitute for oneself, to take a test; 6) Bribing another person to obtain an unadministered test or information about an unadministered test, and; 7) Purchasing, or otherwise acquiring and submitting as one's own work any research paper or other writing assignment prepared by an individual or firm. This section does not apply to the typing of the rough and/or final versions of an assignment by a professional typist.

“Plagiarism” means the appropriation of another’s work or idea and the unacknowledged incorporation of that work into one’s own work offered for credit.

“Collusion” means the unauthorized collaboration with another person in preparing work offered for credit.

“Abuse of Resource Materials” means the mutilation, destruction, concealment, theft or alteration of materials provided to assist students in the mastery of course material.

Students are referred to sections on “Academic Honesty” and “Procedures for Discipline,” in the *Student Guidelines* for information regarding the penalties for violation of these provisions.

Students suspected of engaging in any of the above behaviors will be subject to the University’s disciplinary procedures (up to and including expulsion from the graduate program and the University) and will also receive a final grade of “F” for the course.

### **Disability Services Statement:**

If a student has a disability which qualifies under the Americans with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by the ADA may include learning, psychiatric, physical disabilities or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies. Mailing address: 118 College Drive, # 8586, Hattiesburg, MS 39406-0001; Telephone: (601) 266-5024; TTY: (601) 266-6837; Fax: (601) 266-6035.

### **Important Dates to Remember**

9/1	Last day to drop w/o financial penalty
9/7	No Class – Labor Day
9/30	Last day to drop w/o academic penalty
12/7 – 10	Final Exam Week

## Tentative Course Schedule

<u>Date</u>	<u>Subject Matter</u>
8/24	Course Introduction and Overview
8/31	Overview of Multivariate Techniques
9/7	No Class – Labor Day Holiday
9/14	Overview of Multivariate Techniques
9/21	Techniques for Examining Data & Testing Assumptions
9/28	Techniques for Examining Data & Testing Assumptions
10/5	Techniques for Examining Data & Testing Assumptions
10/12	Techniques for Examining Data & Testing Assumptions
10/19	Multiple Regression Analysis
10/26	Multiple Regression Analysis
11/2	Multiple Regression Analysis
11/9	Multiple Regression Analysis
11/16	Discriminant Analysis (two groups)
11/23	Discriminant Analysis (two groups)
11/30	Discriminant Analysis (two groups)
12/1	Discriminant Analysis (two groups)
12/7 - 10	Final Exam Week