



**PPM 822N: Multivariate Data Analysis  
for Public Policy and Management  
Winter 2009  
Syllabus**

**Professor:**

Robert Greenbaum  
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**Meets:** W 5:30-8:18 PM

**Room:** Page Hall 40

**Credit hours:** 4

**Office Hours:** W 4-5, R 4:30-5:30 and by  
appointment

**Teaching Assistant:**

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614- 292-5175

**Office Hours:**

M 4-5, T 4:30-5:30 and by appointment  
210L Page Hall

**Prerequisite:**

PPM 820 or equivalent

**Online course material:**

Course material will be available on Carmen at <http://www.carmen.osu.edu/>

**Course Objectives:**

The primary objective of this course is to provide an understanding of regression techniques, both from a “producer’s” and a “consumer’s” perspective. Regression, which is a statistical method used to study the relationships between two or more variables, is the most widely used statistical technique in public policy analysis. It is almost impossible to learn statistical concepts without lots of practice using statistical methods, so the course focuses on applying the theory through multiple hands-on exercises, both inside of and outside of class. These exercises will also give students practice in how to use data from external sources and report statistical results in a clear manner. By the end of the course, students should not only be intelligent consumers who can readily interpret regression analysis performed by others, but they will also be equipped to test research hypotheses involving relationships among multiple variables.

**Required Textbook:**

- And Field (2005)  
[Discovering Statistics Using SPSS, Second Edition](#)
  - This is the textbook you used in PPM 820

**Recommended Texts:**

- Damodar N. Gujarati (2006)  
[Essentials of Econometrics, Third Edition](#)
  - Much of the lecture material will be based upon this textbook
  - Textbook Power Point presentations, data, and chapter summaries can be downloaded from the textbooks website: [http://highered.mcgraw-hill.com/sites/0072970928/student\\_view0/index.html](http://highered.mcgraw-hill.com/sites/0072970928/student_view0/index.html)
  - An extra copy of the Gujarati text will be available in the 030 computer lab *for use within Page Hall*. If you borrow the text, please be respectful of your classmates by returning it promptly when you are finished.

**Additional Supplemental Texts:**

- Paul D. Allison (1999)  
[Multiple Regression: A Primer](#)
  - For those who want more intuition regarding what regression is all about in “English”
- Peter Kennedy (2008)  
[A Guide to Econometrics, 6<sup>th</sup> edition](#)
  - A great companion to supplement any econometrics textbook

**Course Format:**

Class sessions will combine lectures that focus on the relevant material from the textbook readings with student participation. Classes will be structured around addressing research questions. To address the question, the relevant theory will be presented along with examples. We will practice using the concepts through examples using SPSS software during class. Students are expected to prepare for class by reading the appropriate textbook and additional readings *prior* to each class. Students are also expected to answer and ask questions during class. Class lecture notes will be available for download on Carmen before each class. If you miss a class, be sure that you get any additional notes from a classmate.

**Course Requirements and Evaluation:**

The course grade will be based upon performance on homework assignments, a midterm exam, and the research paper. Each of the three will be weighted equally.

**Homework**

The homework grade will be based upon the five highest homework grade scores. While students may collaborate on homework assignments, each student must turn in a separate assignment with his or her own answers. Assignments are due at the beginning of class,

and late assignments will not be accepted. If you will miss a class when an assignment is due, please make arrangements beforehand to submit the assignment.

For your homework assignments,

- To receive full credit, show all work.
- Feel free to use SPSS as much as you can/want to
- When you use SPSS to answer a problem
  - Provide the SPSS output as part of what you turn in
    - This is “showing your work” for SPSS problems
  - Organize (properly label) your output
    - It should be obvious which output goes with which questions: It may be best to incorporate the output by cutting & pasting
    - Minimize the amount of output if at all possible
  - Make sure that you also directly answer the question
    - For example, it is not enough to provide the SPSS output that shows that a mean is 1234. You should also tell me that the mean is 1234, as is indicated in the SPSS output

### ***Exam***

The Exam will be in class, open book, and open notes. Collaboration on the exam is strictly forbidden (and unnecessary given the open book policy). Students are reminded to obey all Ohio State rules regarding academic misconduct, which can be found at [http://studentaffairs.osu.edu/resource\\_csc.asp](http://studentaffairs.osu.edu/resource_csc.asp).

### ***Research paper***

The paper is intended to help integrate the course material and provide students an opportunity to demonstrate that they can set up a testable research hypothesis, test the hypothesis, and correctly interpret the results. Students should also demonstrate an awareness of the limitations of their analysis.

Detailed instructions for the research paper will be distributed separately. The paper will be due during exam week.

### Preliminary Course Outline

| Class       | Date   | Topics   | Textbook Readings  |                  | Assignment Due    |
|-------------|--------|--|--------------------|------------------|-------------------|
|             |        |  | Field              | Gujarati Allison |                   |
| 1           | 7-Jan  | L1. Course introduction<br>L2. Probability distributions and estimators            | F1                 | G 1<br>G 2-3     | A 1, 4            |
| 2           | 14-Jan | L3. Prob. distributions & hypothesis testing<br>L4. Regression: two-variable model | F1<br>F5           | G 4-5<br>G 6     | A 5               |
| 3           | 21-Jan | L4. Regression: two-variable model<br>L5. Two-variable model hypothesis testing    | F5<br>F5           | G 6<br>G 7       | A 6<br>HW1        |
| 4           | 28-Jan | L6. Multiple Regression estimation and testing                                     | F5.7               | G 8              | A 2<br>HW2        |
| 5           | 4-Feb  | L7. Multiple Regression functional forms<br>L8. Dummy Variables                    | F5.10              | G 9<br>G 10      | A 8               |
| 6           | 11-Feb | L8. Dummy Variables<br>L9. Model selection   | F5.10              | G 10<br>G 11     | A 3<br>HW3        |
| 7           | 18-Feb | L10. Catch up and review   |                    |                  | HW4               |
| <b>Exam</b> |        |  |                    |                  |                   |
| 8           | 25-Feb | L11. Logit   | F 6                | G 16.6           |                   |
| 9           | 4-Mar  | L12. Multicollinearity<br>L13. Heteroscedasticity                                  | F5.6.2.4<br>F5.8.7 | G 12<br>G 13     | A 7<br>A 6<br>HW5 |
| 10          | 11-Mar | L14. Time Series Data and Autocorrelation<br>L15. Forecasting or other topics      | F5.6.2.1           | G 14             | HW6               |
|             | 18-Mar | <b>Paper due by 5:30pm</b>   |                    |                  |                   |

THIS MATERIAL IS AVAILABLE IN ALTERNATIVE FORMATS UPON REQUEST.  
PLEASE CONTACT THE SCHOOL'S OFFICE AT 292-8696 FOR ASSISTANCE.  
STUDENTS WITH DISABILITIES ARE RESPONSIBLE FOR MAKING THEIR NEEDS  
KNOWN AND FOR SEEKING THE AVAILABLE ASSISTANCE IN A TIMELY MANNER.