Syllabus for RPAD 725: Applied Quantitative Methods

Spring 2014

Instructor: Stephen Weinberg

Pre-requisites: RPAD 705; RPAD 688

This course covers advanced quantitative methods for applied policy analysis, including linear regression, nonlinear estimation, censored data, panel data methods, and simulation-based approaches. Considerable emphasis is placed on actual practice. Accordingly, students will work with a real US government dataset, will use STATA to prepare and analyze the data, and will write the results of their analyses in a manner suitable for publication.

In addition to the weekly lecture, there will be a required 1 hour STATA lab session each week.

Grading

Project 1: 10%
Project 2: 25%
Project 3: 25%
Project 4: 35%
Participation: 5%

The class will require the completion of four projects. Furthermore, projects will be graded not only on statistical skill but also on coding skill and presentation of results, including creating professional tables and figures.

Project 1 will consist of cleaning the class dataset.

Project 2 will consist of using the class dataset to conduct linear estimation, in a professor-assigned problem.

Project 3 will be a team project; each team will select an advanced method from kernel estimation, quantile regression, multinomial models, survival analysis, or count data models. They will use the class dataset to demonstrate the method. Teams will present their method and their project to the rest of the class. Part of your grade will depend on peer assessments of your contribution to the team.
For Project 4, students will propose their own problems using a dataset of their choice. (It is expected that most students will use the class dataset, but students who already have a research area may also use this project as the opportunity to work towards their candidacy requirements; students choosing to work with a different dataset will probably need to take an incomplete.)

Class Participation is based on attendance, preparation, and the quality of comments and questions. The default participation grade for good attendance is a B; to do better you’ll have to, you know, participate.

Each assignment will receive a letter grade. To calculate your semester grade, I will convert the final grade to a 4-pt scale (A = 4.0, A- = 3.66, B+ = 3.33, etc). I will then take a weighted average of all your assignments to get your semester score. The score will be converted into a final letter grade with the following thresholds: A: 3.7 or higher; A-: 3.55 to 3.69; B+: 3.2 to 3.54; B: 3.0 to 3.19; B-: 2.60 to 2.99; C+: 2.25 to 2.59.

Math

We will make heavy use of the algebra of expectations, variances, and probability limits. Students do not need to be able to prove econometric theorems, but need to be able to read econometric notation.

Plagiarism, Working in Groups, and Editing Services

It should, I think, go without saying that you are to abide with SUNY Albany standards for academic honesty.

I encourage you to discuss the course and assignments with your colleagues. However, you must turn in your own work, written in your own words. At no point should you ever work directly off of a colleague’s manuscript of a memo or paper. You must also indicate in a footnote if you received helpful input from someone.

If you use an editing service to help you with the language of your memos and papers, you must actually input any changes into your text yourself. Again, you must acknowledge such help in a footnote. Note that such services are allowed only to help you polish your own work.

Late Policy

Late projects will have 1/3 letter grade deducted per day. Project 3 presentations will not be accepted late except under the most exceptional circumstances.
Books


Schedule

Note: the schedule lists both the main class and the subject covered in the STATA lab.

1. Econometric mathematics
   Lab: review of STATA

2. Approaching a Dataset
   Lab: working with the class dataset

3. Linear Models
   Lab: retrieving and storing results

4. Treatment Evaluation
   Lab: estimating difference-in-differences models in STATA
   Project 1 due

5. Stratified and Clustered Samples
   Lab: programming bootstrap standard errors

6. Nonlinear Estimators
   Lab: factor notation in STATA

7. Binary Outcome Models
   Lab: factor notation in STATA, part 2

8. Tobit and Selection Models
   Lab: organizing STATA for group projects
   Project 2 due

9. Presenting Results from Nonlinear Models
   Lab: the margins command
10. Team Presentations
   Project 3 papers and presentations due
   Lab: tricks with local macros

11. Review of Panel Data and Systems of Equations
    Lab: systems of equations methods in STATA

12. Nonlinear Panel Data
    Lab: STATA’s panel data features

13. Example of Selection Models and Maximum Likelihood Estimation: the switching probit
    Lab: the switch probit command
    Project 4 due