APPLICATION FOR NEW COURSE

1. Submitted by College of The Graduate School ___________________________ Date 2/25/05
   Department/Division offering course Martin School of Public Policy and Administration/Graduate School

2. Proposed designation and Bulletin description of this course
   a. Prefix and Number PA 692
   b. Title* Econometrics for Policy Analysts
      *NOTE: If the title is longer than 24 characters (including spaces), write
      A sensible title (not exceeding 24 characters) for use on transcripts
   c. Lecture/Discussion hours per week 3
   d. Laboratory hours per week 0
   e. Studio hours per week 0
   f. Credits 3
   g. Course description
      Maximum likelihood estimation, ordinary least squares (OLS) regression, instrumental variables (IV) regression,
      heteroscedasticity-consistent regression, fixed and random effects models, probit, logit, and tobit models, and
      identification and two-state least squares estimation of simultaneous equations models.

   h. Prerequisites (if any)
      Any undergraduate statistics course, MPA, MPP or PUAD program status for priority registration, other students with
      permission of instructor.

   i. May be repeated to a maximum of ___________________________ (if applicable)

3. To be cross-listed as
   Prefix and Number ___________________________ Signature, Chairman, cross-listing department

4. Effective Date Fall 2005 (semester and year)

5. Course to be offered
   ☐ Fall ☒ Spring ☐ Summer

6. Will the course be offered each year? ☒ Yes ☐ No
   (Explain if not annually)
   Yes, each spring. It will be required by the new MPP degree as an elective in the PhD program counting as 3 of the nine
   required hours in the research sequence.

8. Why is this course needed?
   To fill a need for a research course aligned with the policy research emphasis in the Martin School.

9. a. By whom will the course be taught? J.S. Butler
   b. Are facilities for teaching the course now available? ☒ Yes ☐ No
      If not, what plans have been made for providing them?
APPLICATION FOR NEW COURSE

10. What enrollment may be reasonably anticipated? 15

11. Will this course serve students in the Department primarily? Yes ☒ No ☐

Will it be of service to a significant number of students outside the Department?
Yes ☐ No ☒
If so, explain.

Will the course serve as a University Studies Program course? Yes ☐ No ☒
If yes, under what Area?

12. Check the category most applicable to this course
   ☒ traditional; offered in corresponding departments elsewhere;
   ☐ relatively new, now being widely established
   ☐ not yet to be found in many (or any) other universities

13. Is this course applicable to the requirements for at least one degree or certificate at the
    University of Kentucky? Yes ☒ No ☐

14. Is this course part of a proposed new program:
    If yes, which?
    The recently approved MPP.
    Yes ☒ No ☐

15. Will adding this course change the degree requirements in one or more programs?*
    Yes ☒ No ☐
    If yes, explain the change(s) below

16. Attach a list of the major teaching objectives of the proposed course and outline and/or reference list to be used.

17. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted. ☐ Check here if 100-200.

18. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. ☐ Check here if 400G-500.

19. Within the Department, who should be contacted for further information about the proposed course?
    Name Edward T. Jennings, Director __________________________ Phone Extension 257-5594 __________________________

*NOTE: Approval of this course will constitute approval of the program change unless other program modifications are proposed.
APPLICATION FOR NEW COURSE

Signatures of Approval:

Department Chair

Dean of the College

Date

Date

Date of Notice to the Faculty

Date

Date

Date

Date

Date

Date of Notice to University Senate

*Undergraduate Council

*University Studies

*Graduate Council

*Academic Council for the Medical Center

*Senate Council (Chair)

*If applicable, as provided by the Rules of the University Senate

ACTION OTHER THAN APPROVAL

Rev 3/04
Office hours for graduate students are whenever I am in the office. Any student in my graduate class may call me at home at any time whatsoever with a question about the class other than grading. I cheerfully accept questions about grades, but only in person!

Book: Econometric Analysis, fourth edition, by William H. Greene. All of the readings are from that book. There are no outside readings. There are extensive notes provided by the instructor which go beyond the content of this course. Students may consult any other useful book.

Grades: 5 problem sets @ 4% each, a mid-term exam @ 25%, a final exam @ 30%, and a paper @ 25% (5% during the semester, and 20% for the paper itself). The number of problem sets is not guaranteed, and each counts 4%, with other weights scaled up or down proportionally, if there are more or fewer than five problem sets.

The paper: write, following the style of a journal article, 2000 and 2500 words (with normal margins, 8 to 10 pages), about the theory appropriate to any social science problem and estimates by OLS or GLS of an equation to elucidate or test the theory. Econometric complications need not be considered in the estimation but should be discussed in the paper. The paper is due by the end of classes, Spring 2004. Late submission results in lower grades, given the quality. Writing more than 2500 words can produce bad results. A few extra words result in small reductions in the grade. A great many extra words can result in rejection of the paper as unresponsive to the assignment.

A paper is more likely to be written if work on it is spaced throughout the semester. There are two assignments during the semester, each counting 2.5%, full credit awarded for on-time submission with revision if that is requested, and 1.0% for late submission up to a week later.

Friday, February 20. Turn in a 200 to 250 word description of the question the paper will answer. Why is this topic interesting to some people? What does the paper propose to do?

Friday, March 12. Turn in a report of 1000 to 1250 words, including tables, describing the data set, including means and standard deviations of data, and reviewing three of the most important books or articles on the topic.
<table>
<thead>
<tr>
<th>Schedule of Topics</th>
<th>Sections in Greene</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matrix algebra</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Probability</strong></td>
<td>3</td>
</tr>
<tr>
<td>Binomial, normal, lognormal, truncated normal, gamma distributions</td>
<td></td>
</tr>
<tr>
<td><strong>Asymptotic distribution theory</strong></td>
<td>4.1-4.3</td>
</tr>
<tr>
<td>Samples and point estimates</td>
<td>4.4</td>
</tr>
<tr>
<td>Convergence, the delta method</td>
<td>4.5</td>
</tr>
<tr>
<td>Maximum Likelihood</td>
<td></td>
</tr>
<tr>
<td>Two-step estimation</td>
<td>4.6</td>
</tr>
<tr>
<td>The Method of Moments</td>
<td>4.7</td>
</tr>
<tr>
<td>mean, variance, skewness, kurtosis, and covariances</td>
<td></td>
</tr>
<tr>
<td>Interval estimates and hypothesis tests</td>
<td>4.8-4.9</td>
</tr>
<tr>
<td><strong>Ordinary least squares (OLS)</strong></td>
<td>6.1-6.2</td>
</tr>
<tr>
<td>Introduction</td>
<td>6.3</td>
</tr>
<tr>
<td>Standard assumptions</td>
<td></td>
</tr>
<tr>
<td>Estimation</td>
<td>6.4.1-6.4.2</td>
</tr>
<tr>
<td>Partitioned regression</td>
<td>6.4.3-6.4.4</td>
</tr>
<tr>
<td>Statistical properties</td>
<td>6.6-6.7</td>
</tr>
<tr>
<td>Linear restrictions</td>
<td>7.1-7.2</td>
</tr>
<tr>
<td>Structural change</td>
<td>7.3-7.11</td>
</tr>
<tr>
<td>Dummy variables</td>
<td>8.1-8.2</td>
</tr>
<tr>
<td>Specification of regressions</td>
<td>8.4</td>
</tr>
<tr>
<td>Pretest estimators</td>
<td>8.5</td>
</tr>
<tr>
<td>Multicollinearity</td>
<td>9.1-9.2</td>
</tr>
<tr>
<td>Missing Observations</td>
<td>9.3</td>
</tr>
<tr>
<td>Errors in variables and instrumental variables</td>
<td>9.5</td>
</tr>
<tr>
<td><strong>Generalized least squares (GLS)</strong></td>
<td>11</td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Heteroscedasticity</td>
<td>12</td>
</tr>
<tr>
<td>Autocorrelation</td>
<td>13</td>
</tr>
<tr>
<td>Pooled time-series cross-sections</td>
<td>14</td>
</tr>
<tr>
<td><strong>Simultaneous equations models</strong></td>
<td>16.1-16.2</td>
</tr>
<tr>
<td>Introduction</td>
<td>16.3</td>
</tr>
<tr>
<td>Identification</td>
<td></td>
</tr>
<tr>
<td>Estimation</td>
<td>16.4-16.6</td>
</tr>
<tr>
<td><strong>Probit, logit, and tobit</strong></td>
<td>19</td>
</tr>
<tr>
<td>Discrete dependent variables</td>
<td></td>
</tr>
<tr>
<td>Limited dependent variables</td>
<td>20</td>
</tr>
</tbody>
</table>
Additional topics and readings distributed, probably, in class.

Introduction to econometrics
1 What models look like DM 2.1, 2.4-2.6
Hypothesis tests
2 Wald, likelihood ratio, & Lagrange multiplier tests *(3)
   The delta method
   1 The delta method *(2)
Simultaneous equations
2 Nonlinearity in the variables 8.3
   Limited dependent variables
   Limited dependent variables *(4)
Generalized Method of Moments
6 The Generalized Method of Moments *(1), DM 17.1-17.4

DM is Davidson and MacKinnon, the textbook


