Econ 481-3  
Topics in Econometrics  
Spring 2020

IMPORTANT: Lectures and office hours will be held in ZOOM until further notice. Check Canvas moving forward to find out when we go back to the classroom. [REGISTER NOW!]

Lecture: TTh 1:30-3:20, KGH 3301

Instructor: Ivan Canay

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Web Page: http://sites.northwestern.edu/iac879  
Office Hours: by appointment

Course Description: This course is the third quarter in the graduate econometrics sequence. It is divided in four parts. Part I presents a comprehensive discussion of the most popular instrumental variables approaches currently used in applied work. Part II presents what I consider to be the fundamental notions behind asymptotic approximations. Part III covers the topic of uniformly valid inference, with an emphasis on inference in moment inequality models. Finally, Part IV presents recent methods for inference in the Regression Discontinuity Design.

Grading: Grading will consist on weekly reports (submitted via Canvas), two problem sets due on April 23rd and May 14th, and an in-class presentation on one of the topics of Part IV. The problem sets will be available a week and a half before the due date and will consist of theoretical questions and empirical/methodological questions. Weekly reports should avoid displays and formulas and be limited to a maximum of two pages. Finally, for the in-class presentation the students must prepare a slide presentation and write a 6-8 pages long set of lecture notes for each class. This part of the course will involve anonymous peer grading. The weighting scheme for the final grade will be:

- Weekly Reports: 20%
- Problem sets: 50%
- In-Class presentation: 30%

Lecture Notes: I will provide lecture notes every week with related references you are supposed to read. The readings listed below include most of the articles we will discuss in class.
**AccessibleNU:** Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

**Zoom:** We will be using Zoom for remote instruction. Each lecture will be recorded and available to watch later on Canvas. If you plan to watch the lecture “live”, please be aware of the following guidelines:

- This is a small class and there are no TAs. This means that I will be not be looking at chat often so I recomend that you DO NOT use chat to try to call my attention or ask a question. You may use chat to share or say something relevant to other participants. Recall that chat is being recorded too.

- If you have a clarification question, use the “raise your hand” feature. My expectation is that you will ask questions and I will plan to answer all of them on a first come, first served basis.

- The use of video is encouraged. Assuming our connections are fast enough I would prefer if you use video, at the very least, when you ask questions. Your microphones will be muted by default and I (or you) will un-mute them when you want to ask your question.

- Note-taking may be challenging in a Zoom lecture. To ease with this, I plan to do the following. First, whatever slides I use for the lecture will be available for you to download a few minutes before the lecture starts. Second, I highly recommend you watch the video trying to understand what I say and then watch it a second time to take notes if you cannot keep up. You can also ask me to stop or slow down and I will be happy to do so.

- My regular lectures (in the classroom) usually last exactly 1 hour and 50 minutes. Using Zoom will make the lectures go much faster. I have decided not to teach “more” material as a consequence of this as this is (hopefully) not a permanent change.
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<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Topics</th>
<th>Evaluation</th>
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<tbody>
<tr>
<td>1</td>
<td>Tu, April 7</td>
<td>Selection on Observables (s)</td>
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<td>2</td>
<td>Th, April 9</td>
<td>Roy Models and LATE (s)</td>
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<td>3</td>
<td>Tu, April 14</td>
<td>Marginal Treatment Effects (s)</td>
<td>PS1 out</td>
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<td>4</td>
<td>Th, April 16</td>
<td>Extrapolation and Some Extensions (s)</td>
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**Part I: Instrumental Variables 101**

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<th>Lecture</th>
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<th>Topics</th>
<th>Evaluation</th>
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<tbody>
<tr>
<td>5</td>
<td>Tu, April 21</td>
<td>Local Asymptotics (b)</td>
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<tr>
<td>6</td>
<td>Th, April 23</td>
<td>Extrapolating Local Power (b)</td>
<td>PS1 due</td>
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<td>7</td>
<td>Tu, April 28</td>
<td>Contiguity (b)</td>
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<td>8</td>
<td>Th, April 30</td>
<td>Local Asymptotic Normality (b)</td>
<td>PS2 out</td>
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<td>9</td>
<td>Tu, May 5</td>
<td>Convolution Theorems (b)</td>
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**Part II: Understanding Asymptotic Approximations**

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<tr>
<td>10</td>
<td>Th, May 7</td>
<td>The Bahadur-Savage Problem (b)</td>
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<td>11</td>
<td>Tu, May 12</td>
<td>Uniformity of the ( t )-test (b)</td>
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<td>12</td>
<td>Th, May 14</td>
<td>Uniformity of Subsampling (b)</td>
<td>PS2 due</td>
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<td>13</td>
<td>Tu, May 19</td>
<td>Inference in Moment Inequality Models I (s)</td>
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<td>14</td>
<td>Th, May 21</td>
<td>Inference in Moment Inequality Models II (s)</td>
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**Part III: Uniformity and Inference with Moment Inequalities**

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<th>Lecture</th>
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<th>Topics</th>
<th>Evaluation</th>
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<tr>
<td>15</td>
<td>Tu, May 26</td>
<td>Intro to Regression-Discontinuity Designs</td>
<td>Presentation</td>
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<tr>
<td>16</td>
<td>Th, May 28</td>
<td>Robust Nonparametric Inference for RDD</td>
<td>Presentation</td>
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<td>17</td>
<td>Tu, June 2</td>
<td>Approximate Permutation Tests in the RDD</td>
<td>Presentation</td>
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<td>18</td>
<td>Th, June 4</td>
<td>Testing Continuity of a Density</td>
<td>Presentation</td>
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Readings


