**Research Inquiry and Design in Education**

**OVERVIEW**

This course aims to help students acquire practical knowledge and skills with which to design a (mostly quantitative) research study, as well as critically evaluate other (mostly quantitative) research studies. We will first discuss practical aspects of various stages of the research process including identifying research problems and questions, writing literature reviews, and utilizing conceptual frameworks. We will then discuss research designs and methods that would be appropriate to answering both descriptive and especially causal research questions. Finally, we will briefly discuss issues associated with collecting data for these designs as well as writing and publishing research papers. Throughout, we will refer to a number of noteworthy papers across the field of international education research as good examples of various aspects of the research process.

Although we will focus mostly on quantitative research studies in this course, only a minimal knowledge of statistics is required. This course in combination with a more detailed methods course in the future will hopefully provide the necessary background to conduct a full and independent research study.

**COURSE STRUCTURE**

The course will meet for 1 class period per day, four days a week (Monday through Thursday), for four weeks (January 16 to Feb. 9). Typically, each class will include an interactive lecture devoted to a particular aspect of the research process, followed by class discussions on the assigned reading for that day of class. In addition, the first three Fridays will have substantial time set aside for mandatory office hours. Usually, students (or pairs of students) will each have about 15 minutes (30 minutes) to discuss questions related to the specific research proposal(s) that they will develop throughout the four weeks. Ideally, the research proposal you develop will very closely relate or even overlap with the topic of your Master’s degree thesis.

**COURSE REQUIREMENTS**

*Participation:* This is a key requirement. All students are expected to attend class, contribute to discussions, as well as to finish assignments in a timely manner. Since academic research is increasingly a collaborative endeavor, students will have opportunities to work on some of the assignments (i.e. the problem sets) together. Students are also encouraged to help each other with their own separate research proposals.

*Readings:* There will be one or a few *short* readings for almost each class and you are expected to read these *before* each class. In the first week of class especially, I will only ask you to read the *parts* of certain paper(s) that are related to the class topic. In this way, the reading load will be at a minimum. I want to emphasize that you are not expected to understand every detail of the more quantitative papers (e.g. the equations), but rather hope you gain an understanding of the specific aspect of the research process that we are going to address in the upcoming class. Again, because class discussions form the basis of a substantial part of the class time, you really have to make sure you read the assigned portions before coming to class.

We will refer several times throughout the course to the following user-friendly textbook to obtain a better understanding of causal research designs in education:

*Shadish, William R, Thomas D. Cook, and Donald T. Campbell. 2002. Experimental and Quasi-Experimental Designs for Generalized Causal Inference. Boston, MA: Houghton Mifflin Company*

*Assignments:* There will several assignments that are associated with various classes. Many of the details about these assignments will be given in class at later dates. For now, it is important that you know that there are a number of smaller assignments, each of which will be a part of a final ***detailed research proposal*** which will be due on the last day of the course. The list of assignments and their weight on your final grade are listed below:

* Participation in class discussion (20%)
* Small assignments (50%) – the first three of these should be used in creating the final research proposal:

1. Write-up of a research problem and research questions (one half to one page)
2. Brief literature review supporting your research problem & questions (1 to 2 pages)
3. Choosing a conceptual framework for your research questions (one page)
4. Short problem set 1: Understanding regression analysis (can be done in pairs)
5. Short problem set 2: Understanding causality (can be done in pairs)
6. Short problem set 3: Data analysis for an experimental study (can be done in pairs)

* Final research proposal (30%) (roughly 5-7 pages): *(1) introduce a problem of interest; (2) clearly identify a researchable question regarding that problem; (3) provide a conceptual framework for understanding the question; and (4) specify a data collection strategy (or dataset)* ***as well as a research design—one that is feasible for a graduate student to implement****. Throughout, use the relevant empirical and theoretical literature to inform the motivation for your proposed study.*

All assignments, but especially the research proposal, must be turned in on time or receive no credit. The problems sets and the referee report can be done together in pairs, *but each student individually must turn in a write-up of the problem set in their own words, so that it reflects the individual’s understanding.* The referee report (one copy) can be turned in by a pair (i.e. two) individuals.

**SCHEDULE**

**WEEK 1**

*Day 1:* *Introductions and overview of the course;*

*Steps of the research process (part 1: research problem, research questions)*

*Readings:* ***READ THE INTRODUCTION SECTIONS ONLY***

1. Di Mo, Linxiu Zhang, Hongmei Yi, Renfu Luo, Scott Rozelle, Carl Brinton. 2011. School Dropouts and Conditional Cash Transfers: Evidence from a Randomized Controlled Trial in Rural China’s Junior High Schools. Reap Working Paper 225.
2. Karthik Muralidharan and Venkatesh Sundararaman. 2011. Teacher Performance Pay: Experimental Evidence from India, Forthcoming in the Journal of Political Economy.
3. Brian G. Moss and William H. Yeaton. 2006. “Shaping Policies Related to Developmental Education: An Evaluation Using the Regression-Discontinuity Design. Educational Evaluation and Policy Analysis 28: 215.

*Assignment 1:* Identify a research problem which you are interested in; specify one (perhaps two or three) specific research question(s) pertaining to that problem. Choose questions which are practical for you, a graduate student who has limited resources, to explore. Explain why your question is an important one. (Length: one-half to one page). DUE WEDNESDAY.

*Day 2: Steps of the research process part 2 (literature review)*

*Readings:*

1. Lincove, J.A. and Painter, G. (2006). Does the Age That Children Start Kindergarten Matter? Evidence of Long-Term Educational and Social Outcomes. Educational Evaluation and Policy Analysis, 28(2) p. 153-179. (***READ pages 153-156 until the data section***)
2. Loyalka, P., Song, Y.Q., Wei, J.G., Rozelle, S. (forthcoming). “Information, College Decisions and Financial Aid: Evidence from a Cluster-Randomized Control Trial in China.” (***READ the introduction only…pay attention to how the literature is cited***)

*Assignment 2:* Read 5-6 published papers related to your research (i.e. master’s thesis) topic. Make sure you look through the key journals in your field. Use the papers to inform your thinking about your particular research problem and questions. Formulate some hypotheses in connection with these research questions. Finally, integrate the literature review and hypotheses into what you wrote for assignment 1 (i.e. to build the next stage of your research proposal). (Length: 1-2 pages; so this means 1.5-2.5 pages total after integrating with assignment 1). DUE FRIDAY.

*Day 3: Steps of the research process part 3 (conceptual framework)*

*Readings (READ the introduction and conceptual/theoretical framework sections only):*

1. Brian G. Moss and William H. Yeaton. “Shaping Policies Related to Developmental Education: An Evaluation Using the Regression-Discontinuity Design. EDUCATIONAL EVALUATION AND POLICY ANALYSIS 2006 28: 215. (***ONLY*** ***READ pages 215-217 up to “Theoretical Approaches and Potential Effectiveness”…AGAIN***)
2. Lincove, J.A. and Painter, G. (2006). Does the Age That Children Start Kindergarten Matter? Evidence of Long-Term Educational and Social Outcomes. Educational Evaluation and Policy Analysis, 28(2) p. 153-179. (***ONLY*** ***READ pages 153-156 until the data section…AGAIN***)
3. Karthik Muralidharan and Venkatesh Sundararaman. Teacher Performance Pay: Experimental Evidence from India, Forthcoming in the Journal of Political Economy, 2011 (***READ the introduction again, but also read the theoretical framework section (up to page 6***).
4. I may add one more 2-5 page reading.

*Assignment 3:* Startdeveloping a conceptual framework related to your research question. (Length: about one page). *This conceptual framework should be revised as you start to think about your research design later in weeks 3 and 4.* DUE MONDAY.

*Day 4: Research standards in education today (descriptive vs. causal studies)*

*Readings:*

1. Shavelson and Towne (2004). What Drives Scientific Research in Education? Questions, Not Methods, Should Drive the Enterprise. Observer Vol.17, No.4 April, 2004. Find it at <http://www.psychologicalscience.org/index.php/uncategorized/what-drives-scientific-research-in-education.html>
2. Shadish, Cook, and Campbell (2002), Chapter 1, pp. 1-32

*Day 5: INDIVIDUAL/PAIR MEETINGS about assignments 1-3 (each person/pair 15/30 minutes)*

**WEEK 2:**

*Day 1: What is regression analysis?*

*Readings:*

1. Statistical Models: Theory and Practice, David Freedman (2005), pp. 1-13, 18-26.
2. (optional) Stock and Watson, chapters 2-3

*Assignment 4 (Problem Set 1):* Understanding Regression Analysis.

PROBLEM SET WILL BE HANDED OUT IN CLASS. DUE NEXT MONDAY

*Day 2: Examining a couple of descriptive studies*

*Readings (READ BOTH, but skim over the technical parts in the second):*

1. Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting the plight of urban schools: A descriptive analysis. Education Evaluation and Policy Analysis, 24(1), 37–62.
2. Curby, T.W., Rudasill, K.M., Edwards, T., and Perez-Edgar, K. 2011. The Role of Classroom Quality in Ameliorating the Academic and Social Risks Associated with Difficult Temperament. School Psychology Quarterly 26:2 (2011), pp. 175–188.

*Day 3: (Field) experiments*

*Readings:*

1. Shadish, Cook, Campbell (2002). Chapters 2, 3, 8. (*the most reading you will have, but* *important reading*)
2. (optional) Cook, T.D. (2002). Randomized experiments in educational policy research: A critical examination of the reasons that the educational evaluation community has offered for not doing them. *Educational Evaluation and Policy Analysis, 24*(3), 175-199.
3. (optional) Shadish, W.R., & Cook, T.D. (2009). The renaissance of field experimentation in evaluating interventions. Annual Review of Psychology, 60, 607-629.
4. (optional) Rubin, D. B. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of Educational Psychology*, *66*(5), 688-701.

*Assignment 5 (Problem Set 2)*: Understanding causality*.*

PROBLEM SET WILL BE HANDED OUT IN CLASS. DUE NEXT FRIDAY.

*Day 4: Examining an experimental study*

*Reading:*

1. Abhijit V. Banerjee, Shawn Cole, Esther Duflo, Leigh Linden. (2007). Remedying Education: Evidence from Two Randomized Experiments in India. Find at http://econ-www.mit.edu/files/804

*Assignment 6 (Problem Set 3):* Data analysis for an experimental study.

PROBLEM SET WILL BE HANDED OUT IN CLASS. DUE NEXT FRIDAY

*Day 5: INDIVIDUAL/PAIR MEETINGS*

**WEEK 3:**

*Day 1: Quasi-experimental research designs (the regression discontinuity design)*

Reading:

1. Chapter 7 of Shadish, Cook, and Campbell (2002)
2. (*optional*) Cook, T.D. (2008). “Waiting for Life to Arrive”: A history of the regression-discontinuity design in Psychology, Statistics and Economics. Journal of Econometrics, Volume 142, Issue 2, February 2008, Pages 636-654.

*Day 2: Examining a few good quasi-experimental studies (the regression discontinuity design)*

*Readings (choose at least one of the following):*

1. Wong, V.C., Cook, T. D., Barnett, W.S., & Jung, K. (2008). An effectiveness-based evaluation of five state pre-k programs. *Journal of Policy Analysis and Management*, *27*(1), 122-154.
2. Reardon, S., Arshan, N., Atteberry, A., & Kurlaender, M. (2010). Effects of Failing a High School Exit Exam on Course Taking, Achievement, Persistence, and Graduation. Educational Evaluation and Policy Analysis, December 2010 vol. 32 no. 4 498-520.

*Day 3: Surveys, sampling, data collection, internal vs. external validity*

*Readings:*

None

*Day 4: Quasi-experimental research designs (matching)*

*Readings:*

1. Shadish, Cook, and Campbell (2002). Pages 161-170.
2. (*skim*) Stuart, E.A. (2010). Matching Methods for Causal Inference: A review and a look forward. Statistical Science 25(1): 1-21.

***Begin thinking about a research design and data sample to answer your research question***

*Day 5: OFFICE HOURS (talk about data and research design for your proposal)*

**Week 4**

*Day 1: Examining a few studies that use “matching”*

*Readings (choose one):*

1. Hong, G., and Raudenbush, S.W. (2005). Effects of kindergarten retention policy on children’s cognitive growth in reading and mathematics. Educational Evaluation and Policy Analysis, 27:3,205-224.
2. Paul L. Morgan, Michelle L. Frisco, George Farkas, and Jacob Hibel. 2008. A Propensity Score Matching Analysis of the Effects of Special Education Services J Spec Educ February 2010 43: 236-254, doi:10.1177/0022466908323007.

*Day 2: Some other Quasi-Experimental Designs (difference-in-difference, etc.)*

*Readings:*

1. Shadish, Cook, and Campbell (2002), Chapter 6

*Day 3: Revisiting Theory and Conceptual Frameworks in an Experimental Context*

*Readings:*

White, H. 2009. Theory-Based Impact Evaluation: Principles and Practice. 3ie Working Paper No. 3. *Find at* <http://www.publicpolicyadvocacy.info/biblioteca/MVI_114.pdf> (pages 1-18).

*Day 4: Writing and Publishing Papers*

*Readings:*

None

**THIS IS THE LAST DAY OF CLASS – YOU MUST TURN IN YOUR RESEARCH PROPOSALS AT THE BEGINNING OF CLASS.**