**SPELMAN COLLEGE**
**Fall 2021, Economics 395 (CRN 90752), Behavioral Game Theory, Giles 201**
**Tuesday and Thursday, 2:25 PM to 3:40 PM**
**Professor: Dr. Angelino C. G. Viceisza**

## OFFICE HOURS AND CONTACT INFORMATION

Office Hours: Tuesday, 10:00-11:00 AM; Thursday, 10:00 AM-1:00 PM; by appointment
Office Location: Department of Economics, Giles Hall, Room 403 (4th floor)
Office Phone: 404-270-6055 (please use email; more below)
Course website: Please check Moodle. *In absence thereof, I will make use of email and/or twitter.*
Personal research website: https://www.angelinoviceisza.com
Email: aviceisz@spelman.edu
Twitter: @aviceisza (follow me for last-minute updates, research opportunities, scholarships, etc.)
Note: I usually respond to simple questions via email (please include ECON/MGT 395 in the subject line). I may, however, refer you to office hours. This tends to be the case for topics related to course performance.

## REQUIRED TEXTS

1) Avinash Dixit, Susan Skeath, and David Reiley. 2014. **Games of Strategy.** 4th edition. ISBN # 978-0-393-12444-6.
2) Angelino C. G. Viceisza. 2012. **Treating the Field as a Lab: A Basic Guide to Conducting Economics Experiments for Policymaking.** 1st edition. ISBN # 978-0-89629-796-8 (freely downloadable at this link; please complete short download form for future updates).
3) Additional readings such as journal articles (see course outline).

## COURSE DESCRIPTION

ECON/MGT 395 draws on game theory and behavioral and experimental economics. Game theory is a way of thinking about situations in which decisionmakers interact. Behavioral economics incorporates psychological principles into standard and game theoretic economic models. Experimental economics is the use of experimental methods to collect data to test standard, game-theoretic and behavioral models. ECON/MGT 395 pulls from these subfields in order to develop quantitative research skills and give the student a feel for graduate work in economics. The primary approach is based on discussion, construction, and testing of standard, game-theoretic, and behavioral models, supported by means of empirical (primarily experimental) applications and examples.

## PREREQUISITES

ECON 242 Principles of Microeconomics, with a minimum grade of C, or approval from the Professor is *required* to take this course. The student must withdraw from this course if the student has not completed this prerequisite or has not received approval from the Professor. Failure to withdraw from the course may result in the student being administratively withdrawn from or denied access to the course. ECON 315 Intermediate Microeconomic Theory (in lieu of ECON 242), ECON 303 Econometrics and ECON 304 Mathematical Economics, all with a minimum grade of C, are *preferred (but not required)* to take this course.

## BEHAVIORAL OBJECTIVES

Upon completion of this course, the student should be able to:
*Quantitative basics*
1. Apply tools from multivariate calculus and statistics to game-theoretic concepts.
2. Partially differentiate explicit and implicit functions.
3. Recognize why and when such methods are required.

*Game theory*
4. Describe game theory (GT), its components, and its applications.
5. Distinguish between simultaneous (strategic) and sequential move games.
6. Define risk, uncertainty and expected utility, and apply these to situations of strategic uncertainty.
7. Distinguish between games of complete and incomplete information as well as symmetric and asymmetric information.
8. Apply the appropriate concepts to solve games of type (5), type (7), and combined games.
9. Recognize and describe applications and examples of these types of games.
10. Relate parlor (day-to-day) games to theoretical games.
11. Apply the tools of game theory to describe and analyze situations of strategic interaction. Specifically, derive testable hypotheses from such games.

*Behavioral*
12. Describe behavioral economics and its assumptions, and how it relates to/is different from standard game theory and neoclassical economics.
13. Discuss and apply behavioral economics concepts. For example:
    a. Departures from standard rationality.
    b. Nonstandard (in particular, non-Bayesian) information processing/updating of beliefs.
    c. Non-expected utility formation such as prospect theory (loss aversion, status quo).
    d. Nonstandard preferences (social, reference-dependent etc.)
    e. Temptation and self-control.
    f. Framing, mental accounting, and endowment effects.

*Experimental*
14. Describe experimental economics and how it relates to/is different from behavioral economics and GT.
15. Discuss experimental applications of game theoretic, behavioral, and neoclassical models.
16. Discuss components of an experiment and sketch an experimental design.
17. Describe the strengths and weaknesses of experimentation.
18. Discuss internal and external validity and relate this to the former point.

## JUSTIFICATION FOR FOUR CREDITS

This is a four credit, three contact-hour course. To justify the additional credit, the student will be required to read assigned book chapters and several articles outside of class. In particular, the student will prepare at least one article and a referee report outside of class, and present/lead the discussion of the article during class.

## COURSE GRADING

The course grade will be determined by:

| | |
|---|---|
| Exam 1 | 15% |
| Exam 2 | 15% |
| Comprehensive final exam | 25% |
| Pre-analysis plan (PAP) | 20% |
| Article presentation and referee report | 15% (10% for presentation and 5% for report) |
| Attendance and participation | 10% (5% for attendance; 5% for participation) |

The following grading scale will be employed:

| Percentage Earned | Grade Earned | Percentage Earned | Grade Earned |
|---|---|---|---|
| 93 – 100 | A | 70 – 74 | C |
| 90 – 92 | A- | 65 – 69 | C- |
| 87 – 89 | B+ | 62 – 64 | D+ |
| 83 – 86 | B | 58 – 61 | D |
| 79 – 82 | B- | below 57 | F |
| 75 – 78 | C+ | | |

**Note: (1) The above scale should be regarded as approximate as the instructor reserves the right to make adjustments in awarding final grades. (2) I typically grade exams with a "bump".**

## PRE-ANALYSIS PLAN (PAP)[1]

The PAP should be based on a carefully developed research question that if properly executed can lead to, in the medium run, an independent study or senior thesis and, in the long run, a peer-reviewed journal article. Additional details on the PAP will be provided in due course; however, the plan should comprise at least the following components:
1) An introduction covering:
    a. The main research question
    b. A review of the literature and the contribution of the particular research question
    c. A paragraph summarizing the organization of the plan
2) A conceptual framework covering:
    a. The (game-theoretic, behavioral, or neoclassical) model setup
    b. The testable hypotheses derived from this model. This should include use of mathematics (e.g., notation, calculus, statistics) to formulate the hypotheses.
3) A study design covering:
    a. An empirical strategy based on an experimental design (i.e., treatments X), with an explicit regression equation of the form $Y=b0+b1*X+b2*Z+error$
    b. An experiment protocol (implementation) based on section 2 (in particular 2b) discussing a plan for collecting outcome data Y
    c. A plan for collecting additional data, i.e., control variables Z by means of a survey
    d. The targeted sample, sample size (power), randomization strategy using software such as Optimal Design (see experimental section of the course outline)
    e. An explicit discussion of internal and external validity
    f. A budget for executing the experiments and related surveys
4) A conclusion and next steps covering:
    a. The (policy) contributions of the research once carried out
    b. Since the student is **NOT** expected to collect data and test the hypotheses in 2b using the strategy proposed in 3a as part of this course, this section of the proposal should discuss how the student plans to carry out the full research project in the future.

For sample PAPs, see https://www.bitss.org/resource-tag/pre-analysis-plans/ as well as my research site. For the related concept of pre-registration, see https://www.socialscienceregistry.org.

The PAP will pass two stages of review (Stage 1 and 2) prior to being submitted for final grading/Stage 3 (see course outline for due dates). Stages 1, 2 and 3 count for 2.5%, 7.5%, and 10% of your grade respectively. The rubric at the end of the document discusses some further guidelines for the plan.

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[1] Students wishing to take the H(onors) option will also be expected to complete CITI training and submit an IRB protocol by the end of the semester.

## ARTICLE PRESENTATION AND REFEREE REPORT

The student will be responsible for presenting <u>at least one</u> article from the reading list (see course outline) in class. The student should plan on presenting for approximately 35 to 40 minutes and the presentation should focus on the article's (1) main question, (2) theoretical and empirical methodology, (3) main findings, (4) relation to class content, (5) assessment of the article (critique, strengths, weaknesses, suggestions for improvement) and (6) issues for class discussion (such as two questions posed to the class for further discussion). The student will also prepare a referee report of the article. The referee report should be between two to three pages and should represent a concise summary of the aforementioned items.

## FORMATTING

All written documentation (in particular, the different stages of the PAP and the referee report) should be in Times New Roman 11-point font with 1.5 spacing and 1-inch margins all around. **ANY FILES THAT ARE UPLOADED TO MOODLE SHOULD BE LESS THAN 2 MB.**

## MAKE-UP POLICIES AND EXTRA CREDIT

1. **EXAMS:** The exams **CANNOT** be made up, whether the absence is excused or not. In case an absence is excused by the Office of the Dean within a week of the missed exam date, I reserve the right to place the weight of the missed exam on the remaining exams.
2. **FINAL EXAM:** The final exam absolutely **CANNOT** be made up. If a student misses the final exam, the student will receive a zero (0) for the exam. An exception **may** be made if a student seeks approval from me **PRIOR** to the exam by providing a valid documented excuse approved by the Office of the Dean. Even in this case, I still reserve the right to deny the student's request.
3. **PAP:** The PAP **CANNOT** be made up, whether the absence is excused or not. If a student misses the plan, the student will receive a zero (0).
4. **ARTICLE PRESENTATION AND REFEREE REPORT:** These assignments **CANNOT** be made up. If the student misses either one, the student will receive a zero (0).
5. **TARDINESS:** Late submissions will **NOT** be accepted. They will receive a zero (0).
6. **EXTRA CREDIT:** It is my experience that most students fail to submit all possible assignments. As such, it does not make economic sense to give opportunities for extra credit since students are not making use of the opportunities already afforded to them. So, I will **NOT** give extra credit, regardless of the student's circumstances.
   **ALL ASSIGNMENTS ARE DUE 11:59 PM OF THE DATE STATED ON THE SYLLABUS. REFEREE REPORTS ARE DUE THE DAY OF THE PRESENTATION. THERE ARE NO EXCEPTIONS TO ANY OF THESE RULES.**

## ATTENDANCE AND PARTICIPATION POLICY

Class attendance and participation are mandatory, as these are integral parts of the class. *As such, 10% of your class grade comes from these components.* Please note the following:
1. Attendance is taken at the beginning of each class.
2. For students who have the habit of arriving after the class begins, I reserve the right to count these as absences. The student is considered late if the student is not present when class begins. I typically count tardiness as an absence if the student arrives after I finished taking attendance. In case of excessive lateness (ten minutes after class begins), I reserve the right to bar a student from entering the classroom.
3. If a student misses zero (0, no) classes, the student receives 100 for the attendance portion of the grade. If a student misses one (1) unexcused class, the student receives 95 for attendance. If a student misses two (2) unexcused classes, the student receives 90 for attendance. Any student with three (3) or more unexcused absences will receive a zero (0) for attendance. *So, this student loses 5% of the course grade.*

4.  **Any student with five (5) or more absences (_excused or unexcused_) will be administratively withdrawn from the course. I will email the student a notification and proceed by processing such withdrawal through the Offices of the Dean of Undergraduate Studies and the Registrar.**

5.  Class participation will be judged based on thoughtful questions and discussions, active participation, **and** lack of disruptive behavior during class (see General Code of Conduct section of this syllabus). In particular, if a student uses a cell phone during class (without my permission), the student will receive a zero (0) for participation. _This means that this student loses 5% of the course grade._
    **THERE ARE NO EXCEPTIONS TO ANY OF THESE RULES.**

## EXAMS: ACCESS, CALCULATOR, AND TECHNOLOGY POLICY

Exams in this course are not permitted to enter "the public domain". Although there is no obligation to allow the student to review exams after they have been reviewed in class and collected, if a student wishes to review an exam, I will typically accommodate the student during office hours.

The following exam-taking policy shall apply:
1.  All students must "completely turn off" their cell phone(s) prior to an exam, place it in their bag, and place their bag (and any other personal belongings) at the periphery of the room.
2.  The following are the ONLY items that may be permitted next to the student while taking an exam:
    a.  The exam paper (given by the professor). **NO SCRATCH PAPER.**
    b.  1-2 number two pencils and possibly, a pen.
    c.  An eraser and/or white-out.
    d.  Either a SIMPLE or SCIENTIFIC calculator.
        i.   GRAPHING or FINANCIAL calculators are NOT allowed.
        ii.  You are NOT allowed to share calculators with another student.
        iii. You are of course NOT allowed to use a cellular phone as a calculator (as it will be in your bag, as stated above).
    e.  No food, drink, or anything else is allowed while taking an exam.
3.  Students should space themselves properly (1-2 seats apart) and NOT communicate in any way. If they do or if I have the feeling that they are, it will be considered cheating.
4.  All headwear should be removed (hats, turbans, etc.) unless it is for religious purposes.

Failure to comply with any of these policies will be considered cheating as defined by the Spelman College Bulletin. _See next item._

## ACADEMIC INTEGRITY

The following is Spelman College's **Academic Integrity Policy**:

"At the heart of Spelman College's mission is academic excellence, along with the development of intellectual, ethical and leadership qualities. These goals can only flourish in an institutional environment where every member of the College affirms honesty, trust, and mutual respect. All members of the academic community of Spelman College are expected to understand and follow the basic standards of honesty and integrity, upholding a commitment to high ethical standards. Students are expected to read and abide by the Spelman College Code of Conduct (see the Spelman College Student Handbook) and are expected to behave as mature and responsible members of the Spelman College academic community. Students are expected to follow ethical standards in their personal conduct and in their behavior towards other members of the community. They are expected to observe basic honesty in their work, words, ideas, and actions. Failure to do so is a violation of the Spelman College Academic Integrity Policy."

_Violators will be subject to the sanctions outlined in the Spelman College Bulletin._

## GENERAL CODE OF CONDUCT (INCLUDING TECHNOLOGY AND CELL PHONE USE POLICY)

It is understood that any student participating in this course will show conduct in a manner that is constructive and non-disruptive to the learning environment. This is out of mutual respect for the professor as well as fellow students.

With this in mind, use of any form of technology—including computers and cell phones—is only allowed if it is absolutely necessary for the student's learning within the course. If so, the student should see me by the end of the first day of class to discuss and potentially obtain permission to use such a technology. Even if granted, I still reserve the right to revoke this privilege if I note in a future class that such technology is being used for purposes other than learning related to the course.

**In the absence of such permission, use of technologies is strictly prohibited unless the professor explicitly requests the students to use such technologies. The student should turn off cell phones, laptops, tablets, or any other noise-making devices while in class as these can generally be considered disruptive. Any such disturbances will result in automatic eviction from class. NO EXCEPTIONS!!!**

## DISABILITY STATEMENT

The following is Spelman College's **Disability Statement**:

"Spelman College is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or think you may have a disability) and, as a result, need a reasonable accommodation to participate in class, complete course requirements, or benefit from the College's programs or services, you should contact the Office of Disability Services (ODS) as soon as possible. To receive any academic accommodation, you must be appropriately registered with ODS. The ODS works with students confidentially and does not disclose any disability-related information without their permission. ODS serves as a clearinghouse on disability issues and works in partnership with faculty and all other student service offices. For further information about services for students with disabilities, please contact the ODS at 404-270-5289 (voice), located in MacVicar Hall, Room 106."

## STUDENT SUCCESS PROGRAM

The SSP (see https://www.spelman.edu/academics/ssp) is located in the Milligan Building, 2nd floor. The Program provides peer tutors for various subject areas, including economics. The schedule of times when peer tutors will be available can be acquired from SSP. This is a valuable resource for student learning and students are urged to avail themselves of their services. Peer tutors have previously been successful in economics courses.

## GENERAL REMARKS

1. Students are expected to plan their air travel at the end of the semester so that it does not conflict with the final exam. The same applies to other types of travel throughout the semester.
2. Students should select a "buddy" in the course from whom they can obtain materials in case they miss class. It is the student's responsibility to obtain such material and stay up to speed.
3. The syllabus provides a general plan for the course; deviations may be necessary.

## COURSE OUTLINE

The following course outline is a general plan of action and deviations may be necessary. In particular, additional student presentations may be scheduled depending on eventual class size.

## Introduction
8/19
- Syllabus and introduction

8/24-8/26
- An introduction to game theory (with linkages to individual choice, (expected) utility theory, behavioral and experimental)
    o Readings
        ▪ *Games of Strategy*, Part I
        ▪ Gibbons, R. 1997. An introduction to applicable game theory. *Journal of Economic Perspectives* 11 (4): 127-149
        ▪ Samuelson, L. 2016. Game theory in economics and beyond. *Journal of Economic Perspectives* 30 (4): 107-130
        ▪ Thaler, R. H. 2016. Behavioral Economics: Past, Present, and Future. *American Economic Review* 106 (7): 1577-1600

8/31-9/2
- Some "technical" concepts/foundations from mathematics and statistics
    o Lecture Notes
    o Online videos to be watched/processed ***PRIOR to class***
    o ***If these links become inactive, search youtube for Khan Academy videos related to these topics***
        ▪ Univariate calculus (calculus of one variable)
            • Derivatives as slope: https://www.youtube.com/watch?v=ANyVpMS3HL4
            • Quotient rule: https://www.youtube.com/watch?v=E_1gEtiGPNI
            • Also watch for power rule, product rule, and chain rule.
        ▪ Multivariate calculus (calculus of more than one variable)
            • Part 1: https://www.youtube.com/watch?v=1CMDS4-PKKQ
            • Part 2: https://www.youtube.com/watch?v=-u0mqFqpMNY
        ▪ Probability and statistics
            • Part 1: https://www.youtube.com/watch?v=3ER8OkqBdpE
            • There are also other parts; review 2-4 if you can.

## Game theory

9/7
- Simultaneous-move games and Nash equilibrium
    o Readings
        ▪ *Games of Strategy*, Chapters on simultaneous-move games (pure and mixed strategies)
    o Application
        ▪ Classroom coordination game with discussion.

***9/7: Stage 1 of the PAP is due!!!***

9/9
- Simultaneous-move games and Nash equilibrium (continued)
  o First student presentation based on:
    ▪ Camerer, C. 2003. Behavioral game theory. Sections 7.1 and 7.2
  o Second student presentation based on:
    ▪ Aflagah, K., T. Bernard, and A. C. G. Viceisza. 2021. "Cheap talk and coordination in the lab and in the field: Collective commercialization in Senegal." Revise and resubmit at *Journal of Development Economics*

9/14
- Sequential-move games and subgame perfect Nash equilibrium
  o Readings
    ▪ *Games of Strategy*, Chapters on sequential-move games
  o Application
    ▪ Classroom trust game with discussion

9/16
- Sequential-move games and subgame perfect Nash equilibrium (continued)
  o Third student presentation based on:
    ▪ Camerer, C. 2003. Behavioral game theory. Section 2.7
    ▪ Hill, R. V., E. Maruyama, and A. C. G. Viceisza. 2012. "Breaking the norm: An empirical investigation into the unraveling of good behavior." *Journal of Development Economics* 99 (1): 150-162
  o Fourth student presentation based on:
    ▪ Camerer, C. 2003. Behavioral game theory. Sections 4.1
    ▪ Castillo, M., R. Petrie, M. Torero, and L. Vesterlund. 2013. "Gender Differences in Bargaining Outcomes: A Field Experiment on Discrimination." *Journal of Public Economics* 99: 35-48

9/21
- Refinements of and departures from equilibrium and backward induction
  o Readings
    ▪ Weibull, J. 2004. "Testing Game Theory." In *Advances in Understanding Strategic Behaviour: Game Theory, Experiments and Bounded Rationality: Essays in Honour of Werner Güth*, ed. S. Huck. Basingstoke, UK: Palgrave Macmillan
    ▪ Supplementary material on strategic reasoning (level-k models)
  o Application
    ▪ Classroom beauty contest game with discussion

9/23
- Games of imperfect information
  o Readings
    ▪ *Games of Strategy*, Chapter 9
  o Application
    ▪ Signaling game with discussion

***9/28: Exam 1 (all material up to now)***

**Behavioral**

9/30
- Departures from expected utility: Prospect theory and other non-expected utilities
    - Readings
        - Kahneman, D. and A. Tversky. 1979. Prospect Theory: An Analysis of Decision under Risk. *Econometrica* 47 (2): 263-292
        - Barberis, N. C. 2013. Thirty Years of Prospect Theory in Economics: A Review and Assessment. *Journal of Economic Perspectives* 27 (1): 173-96
    - Application: Classroom risk experiment and discussion

10/5, 10/7
- NO CLASS DUE TO FALL BREAK

*10/10: Stage 2 of the PAP is due!!!*

10/12
- Departures from expected utility: Prospect theory and other non-expected utilities (continued)
    - Fifth student presentation based on:
        - Harrison, G. and L. Rutstrom. Expected utility theory and prospect theory: one wedding and a decent funeral. *Experimental Economics* 12 (2): 133-158
    - Sixth student presentation based on:
        - Charness, G. and A. C. G. Viceisza. 2016. Three risk-elicitation methods in the field: Evidence from rural Senegal. *Review of Behavioral Economics* 3 (2): 145-171.

10/14
- Departures from exponential discounting: Present bias (or not) and non-standard discounting
    - Readings
        - Cohen, J., K. M. Ericson, D. Laibson, and J. M. White. 2020. "Measuring Time Preferences." *Journal of Economic Literature* 58 (2): 299-347
    - Application
        - Classroom time experiment and discussion

10/15: Midterm grades submitted

10/19
- Departures from exponential discounting: Present bias (or not) and non-standard discounting (continued)
    - Seventh student presentation based on:
        - Andersen, S., G. W. Harrison, M. I. Lau, and E. E. Rutström. 2008. "Eliciting Risk and Time Preferences." *Econometrica* 76 (3): 583–618.
    - Eighth student presentation based on:
        - Ashraf, N., D. Karlan, and W. Yin. 2006. Tying Odysseus to the mast: Evidence from a commitment savings product in the Philippines. *Quarterly Journal of Economics* 121 (2): 635-672

10/21   NO CLASS

10/25: Last day to withdraw with a "W"

10/26
- Non-standard data (e.g., neuroeconomics)
  - Readings
    - Supplementary handouts
  - Ninth student presentation based on:
    - Nakasone, E., M. Torero, and A. C. G. Viceisza. 2020. "Neuroeconomics for development: Eye-tracking to understand migrant remittances."

10/28
- Departures from rationality and other behavioral anomalies (framing, endowment, mental accounting, bounded rationality, reference dependence, status quo, and so on)
  - Readings
    - Supplementary handouts and/or readings
  - Tenth student presentation based on:
    - Plott, C. and K. Zeiler. 2005. The Willingness to Pay–Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations. *American Economic Review* 95 (3): 530-545

## **Experimental**

11/2
- Experimental approach I: Design and treatments
  - Readings
    - Smith, V. L. 1976. Experimental Economics: Induced Value Theory. *American Economic Review* 66 (2): 274-279
    - Guide by Viceisza, Chapters 1 and 2
- Power and Sample size
  - Readings
    - Guide by Viceisza, Chapter 2
    - Spybrook, J., H. Bloom, R. Congdon, C. Hill, A. Martinez, and S. W. Raudenbush. 2011. "Optimal Design Plus Empirical Evidence: Documentation for the 'Optimal Design' Software." https://sites.google.com/site/optimaldesignsoftware/home.

11/4
- Experimental approach I: Design and treatments (continued)
  - Readings
    - Smith, V. L. 1982. Microeconomic Systems as Experimental Science. *American Economic Review* 72 (5): 923-995
  - Eleventh student presentation based on:
    - Viceisza, A. C. G. 2016. Creating a Lab in the Field: Economics Experiments for Policymaking. *Journal of Economic Surveys* 30 (5): 835-854

11/9
- Inferences from experiments: Statistics, econometrics, internal and external validity
  - Readings
    - Guide by Viceisza, Chapter 2 (continued)
    - Guide by Viceisza, Chapter 4
    - Falk, A., and J. J. Heckman. 2009. Lab Experiments Are a Major Source of Knowledge in the Social Sciences. *Science* 326 (5952): 535-538.

- Athey, S., and G. W. Imbens. 2017. The State of Applied Econometrics: Causality and Policy Evaluation. *Journal of Economic Perspectives* 31 (2): 3-32.

11/11   NO CLASS

*11/16: Exam 2 (all material between Exams 1 and 2)*

11/18
- Experimental approach II: Protocol and implementation
    o Readings
        ▪ Guide by Viceisza, Chapters 1 and 2 (continued)
    o Twelfth student presentation based on:
        ▪ Duflo, E., R. Glennerster, and M. Kremer. 2007. "Using Randomization in Development Economics Research: A Toolkit." In *Handbook of Development Economics*, ed. T. P. Schultz and J. Strauss. Amsterdam: Elsevier Science

11/23, 11/25
- NO CLASS DUE TO THANKSGIVING

*11/29: Stage 3 of the PAP is due!!!*

11/30
- Review: tying it all together

***COMPREHENSIVE FINAL EXAM DURING THE WEEK OF DECEMBER 6-10***

## GRADING RUBRIC FOR THE PAP

| Rank | Content Quality | Quality of Written Exposition | Approximate score |
|------|-----------------|------------------------------|-------------------|
| Excellent | The plan is technically strong in that it comprises (1) an excellent literature review, (2) a well-developed theoretical model, (3) a tight empirical strategy to test the hypotheses derived from 2, (4) a discussion of policy implications, and (5) a discussion of ways forward. | The plan is written in an academic manner, following typical standards observed in the literature. This applies both to the use of the English language (grammar, spelling, and so on), but also to the use of mathematical notation. Notation needs to be used as appropriate and be properly defined. The student should use academic articles in top peer-reviewed journals as a guide (see course reading list for examples of such articles). | 90-100 |
| Very Good | The plan is strong in categories (1), (2), (3), and (5), but is weak in category (4). | The plan uses notation inappropriately. | 85-89 |
| Good | The plan is strong in categories (1), (2), and (3), but is weak in categories (4) and (5). | The plan uses notation inappropriately and does not necessarily read as an academic article. | 80-84 |
| Fair | The plan is weak in any of the categories (1), (2), or (3). | Same as former. | 75-79 |
| Limited | The plan is weak in one or more of the categories (1), (2), and (3). | Same as former. | 70-74 |
| Weak | The plan is weak in all categories. | Same as former. | 69 and below |

Other tips/issues for consideration for the PAP:
1. It is imperative that you start with a proper research question that is informed by and sufficiently different from prior literature.
2. Generally, references must come from a reputable source, for example:
   o Journal articles; e.g. *American Economic Journal: Applied Economics*, *American Economic Review*, *Econometrica*, *Experimental Economics*, *Games and Economic Behavior*, *Journal of Development Economics*, *Journal of Health Economics*, *Journal of Labor Economics*, *Journal of Public Economics*, *Journal of Political Economy*, *Journal of Urban Economics*, *Review of Black Political Economy*, *Review of Economics and Statistics*, *Review of Economic Studies*, and *Quarterly Journal of Economics*.
   o Working papers from reputable sources such as www.nber.org or faculty research pages (e.g. while searching Google Scholar).
   o Discuss with me during office hours to get insights into additional references.
   o Visit AUC Woodruff Library and speak to the "Economics/Business" Librarian. You can contact them via email (see library website). E.g. you can use their services (such as interlibrary loan) to access journals and NBER working papers electronically.
3. Use the sample PAPs at https://www.bitss.org/resource-tag/pre-analysis-plans/ as a guide for what your PAP should look like.
4. Differentiate between a theoretical model and an empirical model. A theoretical model is important because it gives a framework for formally deriving hypotheses, which in turn can be tested using an empirical model based on real-world data. These can come from e.g.:
   o Experiments (lab and/or field), particularly relevant in this course.
   o Surveys.
   o Administrative data (e.g. Census).