**SPELMAN COLLEGE**
**Fall 2024, Economics/Management 395 (CRN 95676/95880), 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; and by appointment
Office Location: Economics Department, Giles Hall, Room 403 (4th floor)
Email: aviceisz@spelman.edu. Office Phone: Please use email.
Course website: Please check Canvas. *In absence thereof, I will make use of email.*
Personal research website: https://www.angelinoviceisza.com
Note: I usually respond to simple questions via email (please include ECON/MGT 395 in the subject line). I may, however, refer the student 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).

## ADDITIONAL RESOURCE

The University of California, San Diego's *Game Theory Video Handbook (GTVH)* is also available to support the game theory section of the course. To access GTVH, register for a free account at https://econvideos.ucsd.edu/. The Spelman email address should grant access, but the email verification code might go to Spelman's quarantine filter. If so, manually release it by visiting https://security.microsoft.com/quarantine.

## COURSE DESCRIPTION

**Economics** is the study of decision-making, typically in the presence of scarce resources. While economics often involves topics such as wealth and finance, it is not just about money. **ECON/MGT 395 Behavioral Game Theory** draws on three subareas of economics: (1) game theory, (2) behavioral economics, and (3) experimental economics. Game theory is a (mathematical) way to think about strategic interactions, for example, relationships between teachers and students; employers and employees; spouses; and so on. Behavioral economics incorporates psychology (of decision-making) into economics models, for example, the fact that people are not always "rational" in the neoclassical economics sense. Experimental economics is the use of experimental methods to collect data to test economics models, be those game-theoretic, behavioral, or other models.

In short, ECON/MGT 395 draws on three subfields of economics to develop quantitative research skills aimed at understanding human behavior, interactions, and welfare. The primary approach will be based on discussion, construction, and testing of theoretical models, supported by means of empirical (primarily experimental) examples. Sample applications that will be covered in ECON/MGT 395 include but are not limited to (1) why people free-ride (e.g., in group work) and ways to mitigate this, (2) how social norms such as trust and reciprocity affect (contractual) relationships, (3) whether artificial intelligence enhances or reduces human productivity and welfare, and (4) the use of game theory to develop management strategy and study labor market discrimination.

## PREREQUISITES

Economics 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 this prerequisite has not been met or approval has not been obtained from the professor. Failure to withdraw from the course will result in the student being administratively withdrawn. ECON 315 Intermediate Microeconomic Theory (in lieu of ECON 242), ECON 303 Econometrics, and ECON 282 Mathematical Economics are *preferred (but not required)* to take this course.

## BEHAVIORAL OBJECTIVES

Upon completion of this course, the student should be able to:

*Game theory*

1. Apply tools from multivariate calculus and statistics to game-theoretic concepts.
2. Define game theory (GT), its components, its applications, and its usefulness.
3. Distinguish between simultaneous and sequential move games.
4. Define risk, uncertainty, and expected utility, and apply these to situations of strategic uncertainty.
5. Distinguish between games of (in)complete as well as (a)symmetric information.
6. Recognize and describe applications and examples of these types of games.
7. Apply the tools of game theory to describe and analyze situations of strategic interaction.
8. Solve games and derive testable hypotheses from them.
9. Relate parlor (day-to-day) games to theoretical games.

*Behavioral*

10. Define behavioral economics and its assumptions.
11. Describe how behavioral economics relates to/is different from GT and neoclassical economics.
12. Discuss and apply behavioral economics concepts such as:
    a. Departures from standard rationality.
    b. Non-traditional preferences, e.g., social preferences or hyperbolic discounting.
    c. Non-expected utility formation such as prospect theory (loss aversion, status quo).
    d. Non-standard (in particular, non-Bayesian) information processing/updating of beliefs.
    e. Framing and endowment effects.
    f. Neuroeconomics and non-choice/choice process data.

*Experimental*

13. Define experimental economics.
14. Describe how experimental economics 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.

## GENERATIVE ARTIFICIAL INTELLIGENCE (AI)

AI (i.e., ChatGPT and other large language models/neural networks) is a powerful tool that has the potential to enhance human productivity. At the same time, the impacts of AI on student learning are mixed. For example, a field experiment by Bastani et al. (2024) finds that students perform better in the presence of AI (i.e., standard ChatGPT and GPT "tutors") but when such access is taken away, they do worse than students who never had access to AI to begin with. In other words, the students who had access to AI used it as a "crutch" during practice problem sessions, thus gaining a false sense of security. Given more than 60 percent of the student's grade in this course will come from ***in-class*** exams, where AI will not be available, the student should use AI ***responsibly*** outside of class. Here are some examples of what I consider responsible versus irresponsible use of AI.

| Responsible | Irresponsible and Academically Dishonest |
|---|---|
| The student asks AI for refresher questions/examples about calculus, utility indifference curves, etc. | The student asks AI for answers to quiz questions and submits them as is (to save time). |
| The student asks AI to help find research papers on topic X, i.e., to assist with a literature review. | The student asks AI to write a research paper, or sections such as a literature review, on topic X. |

Even in cases of responsible use of AI, the student should be aware of the following. First, AI does not necessarily know when it is right or wrong. That is, just because AI gives an answer, does not mean that said answer is correct. Second, work generated by AI is typically considered part of the public domain. This has repercussions for (A) attribution of such work (copyright) as well as (B) who can access such information. So, for example, if someone uses AI to analyze a private/confidential dataset, this is problematic. Third, the student should be ready to "explain themselves" at any point in this course, especially for the research paper. So, if a student uses or follows AI without critical inquiry, they are unlikely to be successful in this course.

In short, we are all learning how to optimally use AI. So, I suggest using it as a complement (rather than a substitute) to other course resources such as the lecture notes, IMVH, office hours, work sessions, tutors, etc.

## 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% |
| 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+ | | |

**Notes:**

**(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".**

**(3) Optional final exam: If a student is satisfied with their letter grade at the end of the course, i.e., after the last class and once all grades have been populated (including the last stage of the research paper as well as attendance and participation), the student can choose not to take the final exam by notifying the instructor via email. In such case, the course grade will be whatever letter grade is on**

**Canvas up to that point.** ***That said, if a student does take the final exam, it will factor into the overall course grade as explained above.***

## 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 and why we should care about it.
    b. A review of related economics literature and the contribution of the 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 (plan for 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 target sample, sample size (power), and randomization strategy.
    e. An explicit discussion of internal and external validity.
    f. A budget for executing the experiments and related surveys.
4) A conclusion covering:
    a. Potential policy and welfare implications that may result from the research.
    b. Next steps for moving the research forward, e.g., in a future course or in graduate school.

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.

## ARTICLE PRESENTATION AND REFEREE REPORT

The student will be responsible for presenting at least one 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 (1) the main question, (2) the theoretical and empirical methodology, (3) the main findings, (4) the article's relation to class content, (5) an assessment of the article (critique, strengths, weaknesses, suggestions for improvement) and (6) two issues for class discussion, e.g., two key questions posed to the class. 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.

[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.

## 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 CANVAS SHOULD BE LESS THAN 2 MB.**

## MAKE-UP POLICIES AND EXTRA CREDIT

1. **REGULAR EXAMS:** There are **NO** make-up exams, 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 prorate the weight of the missed exam over the remaining exams.
2. **FINAL EXAM:** The final exam **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 stages of the PAP **CANNOT** be made up, whether excused or not. If a student or group misses them, the student/members will receive a zero (0).
4. **TARDINESS:** Late submissions will **NOT** be accepted. They will receive a zero (0).
5. **EXTRA CREDIT:** 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 the course 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 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, the student loses 5% of the course grade.*
4. **Any student with five (5) or more absences (*be they 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. It is up to the student to verify whether the Dean's Office will excuse an absence prior to missing class.**
5. Class participation will be judged based on thoughtful questions and discussions, active participation (e.g., coming to the board), 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. *So, the 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) in the front of the room. Also, remove any watches (traditional or electronic – e.g., Apple watches) or any other devices.
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. Students are NOT allowed to share calculators.
        iii. Students are NOT allowed to use cellular phones etc. as calculators.
    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 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!!!**

## STUDENT ACCESS STATEMENT

The following is Spelman College's **Student Access 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 (SSP)

The SSP is in the Milligan Building, 2nd floor. The Program provides peer tutors for various subject areas, including economics. 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. The schedule of times when peer tutors are available can be acquired from SSP. Spelman also provides access to tutor.com.

## GENERAL REMARKS

1. Students are expected to plan their travel, especially during holidays and at the end of the semester, so that it does not conflict with class activities/exams. The same applies to other types of travel throughout the semester, e.g., for interviews. All course dates are known at the outset (see next section), so it makes sense to schedule necessary travel around those, e.g., on dates when we will not have class.
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

8/22
- Syllabus and introduction

8/27-8/29
- An introduction to game theory (with linkages to individual choice, (expected) utility theory, behavioral and experimental)
    - 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

9/3-9/5
- Some "technical" concepts/foundations from mathematics and statistics
    - Lecture Notes
    - Online videos to be watched/processed ***PRIOR to class***
    - ***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

9/10
- Simultaneous-move games and Nash equilibrium
    - Readings
        - *Games of Strategy*, Chapters on simultaneous-move games (pure and mixed strategies)
    - Application
        - Classroom coordination game with discussion.

***9/11: Stage 1 of the PAP is due!!!***

9/12

- Simultaneous-move games and Nash equilibrium (continued)
    - First student presentation based on:
        - Camerer, C. 2003. Behavioral game theory. Sections 7.1 and 7.2
    - Second student presentation based on:
        - Aflagah, K., T. Bernard, and A. C. G. Viceisza. 2022. "Cheap talk and coordination in the lab and in the field: Collective commercialization in Senegal." *Journal of Development Economics*, 154: 102751

9/17

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

9/19

- Sequential-move games and subgame perfect Nash equilibrium (continued)
    - 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
    - Fourth student presentation based on:
        - Camerer, C. 2003. Behavioral game theory. Sections 4.1
        - Bertrand, M., and S. Mullainathan. 2004. "Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination." *American Economic Review*, 94 (4): 991-1013

9/24

- Refinements of and departures from equilibrium and backward induction
    - 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)
    - Application
        - Classroom beauty contest game with discussion

9/26

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

***10/1: Exam 1 (all material up to now)***

**Behavioral**

10/3 ***Virtual class and office hours***

- 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

10/8, 10/10

- NO CLASS DUE TO FALL BREAK

***10/13: Stage 2 of the PAP is due!!!***

10/11: Midterm grades submitted

10/14: Last day to withdraw with a "W"

10/15

- 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

10/17

- 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

10/22

- 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

10/24

- 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." Pre-Analysis Plan.

10/29

- Departures from rationality and other behavioral anomalies (framing, endowment, 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**

10/31

- 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
        - Stata's power command

11/5

- NO CLASS DUE TO ELECTION DAY

11/7

- 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

11/12

- 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
    - Twelfth student presentation based on:
        - Otis, N. G., Clarke, R., Delecourt, S., Holtz, D., R. Koning. 2024. "The Uneven Impact of Generative AI on Entrepreneurial Performance." Working Paper

11/14

- Experimental approach II: Protocol and implementation
    - Readings
        - Guide by Viceisza, Chapters 1 and 2 (continued)
    - Thirteenth 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

***11/19: Exam 2 (all material between Exams 1 and 2)***

11/21 ***Virtual class and office hours***

- Wrap up experimental and miscellaneous topics

11/26, 11/28

- NO CLASS DUE TO THANKSGIVING

***12/1: Stage 3 of the PAP is due!!!***

12/3

- Review: tying it all together

***COMPREHENSIVE FINAL EXAM Tuesday, December 10 at 10:30 a.m. - 12:30 p.m.***

**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:
    - 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*.
    - Working papers from reputable sources such as www.nber.org or faculty research pages (e.g. while searching Google Scholar).
    - Discuss with me during office hours to get insights into additional references.
    - 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.:
    - Experiments (lab and/or field), particularly relevant in this course.
    - Surveys.
    - Administrative data (e.g. Census).