Syllabus for EC490-001 Research Seminar in Economics

Designing Economic Mechanisms

North Carolina State University
Instructor: William Phan (wphan@ncsu.edu)
TA: TBA
Semester: Spring 2025
Time: Tuesdays and Thursdays, 4:30-5:45pm. From 01/06/25 to 04/22/25.
Place: 1120 Nelson Hall
Office Hours: By appointment @ 4104 Nelson Hall or Zoom
Course Website: Link at `https://wphan.wordpress.ncsu.edu/367-2/`
Prerequisites: EC/ARE 301 and EC 302 and [BUS/ST 350 or ST 312 or ST 370 or ST 372]

Outline

The final course for students completing the undergraduate programs in economics. I will start the course by giving a series of lectures on the design of economic mechanisms. We will follow the "axiomatic" approach: state the problem and what an allocation or solution is, define desirable properties (axioms) of allocations, construct systematic protocols to compute an allocation based on the problem (a mechanism), and determine what if these mechanisms satisfy the properties. Properties of interest include those regarding efficiency, the myriad aspects of fairness, and non-manipulability. Students will study a selected economic issue, make classroom presentations related to the seminar topic, and write research papers.

Schedule

We will study topics in the (preliminary) order:

- Adjudication of Bankruptcy Claims

- Rationing Vaccines

- Allocating Objects (that cannot be divided)

- Using Lotteries to Recover Fairness

- School Choice

- Auctions

I will post relevant papers on our course website, and provide a bibliography below.

Assessment

I will ask you to write a Topic Report detailing/summarizing two topics from above. As we proceed through the lectures, I will ask you to think of a specific scenario where there are resources to be divided/allocated/exchanged, and write about it in your Paper Proposal. You will give a Presentation on your proposal, and write your Course Paper (due at the end of the semester) based on this proposal. I will send more specific instructions as we go along.

  Topic Report: 15%
  Paper Proposal: 15%
  Course Paper: 50%
  Presentation: 20%

Materials

Lectures will be based on articles and books provided in the bibliography. I will use slides for lectures, and will provide these on the course website. I attempt to make them self-contained, but if you would like further information, then please consult the particular reference in the bibliography.

Academic Integrity and Honesty

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct (NCSU POL 11.35.01). When you turn in any homework, exam, or group project, you are committing to the Pack Pledge, "I have neither given nor received unauthorized aid on this test or assignment.'

Please refer to the Academic Integrity web page for a detailed explanation of the University's policies on academic integrity and some of the common understandings related to those policies. Violations of academic integrity will be handled in accordance with the Student Discipline Procedures (NCSU REG 11.35.02).

Students with Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Resource Office at Holmes Hall, Suite 304, 2751 Cates Avenue, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (NCSU REG 02.20.01).

Student Identity

In an effort to affirm and respect the identities of transgender students in the classroom and beyond, please contact me if you wish to be referred to using a name and/or pronouns other than what is listed in the student directory.

Personal Safety Requirements Related to COVID-19

Due to the COVID-19 pandemic, public health measures continue to be implemented across campus. Students should stay current with these practices and expectations through the Protect the Pack website. The sections below provide expectations and conduct related to COVID-19 issues.

Health and Participation in Class

We are most concerned about your health and the health of your classmates and instructors/TAs.

- If you test positive for COVID-19, or are told by a healthcare provider that you are presumed positive for the virus, please work with your instructor on health accommodations and follow other university guidelines, including self-reporting.

- If you are in quarantine, have been notified that you may have been exposed to COVID-19, or have a personal or family situation related to COVID-19 that prevents you from attending this course in person (or synchronously), please connect with your instructor to discuss the situation and make alternative plans, as necessary.

- If you need to make a request for an academic consideration related to COVID-19, such as a discussion about possible options for remote learning, please talk with your advisor for the appropriate process to make a COVID-19 request.

Health and Well-Being Resources

Everyone is encouraged to take care of themselves and their peers. If you need additional support, there are many resources on campus to help you:

- NCSU Counseling Center

- Student Health Services

- If the personal behavior of a classmate concerns or worries you, either for the classmate's well-being or yours, we encourage you to report this behavior to the NC State CARES team: Share a Concern.

- If you or someone you know are experiencing food, housing or financial insecurity, please see the Pack Essentials Program.

Community Standards related to COVID-19

We are all responsible for protecting ourselves and our community. Please see the community standards and Rule 04.21.01 regarding Personal Safety Requirements Related to COVID-19.

Course Expectations Related to COVID-19:

- **Face Coverings:** All members of the NC State academic community are expected to follow all university policies and guidelines, including the Personal Safety Rule and community standards, for the use of face coverings.

- **Course Attendance:** NC State attendance policies can be found at: REG 02.20.03 — Attendance Regulations — Policies, Regulations & Rules. Please refer to the course's attendance, absence, and deadline policies for additional details. If you become ill with COVID-19, you should follow the steps outlined in the health and participation section above.

- **Technology Support:** This course may require particular technologies to access materials. See also here for more information. If you need access to additional technological support, please contact the Libraries' Technology Lending Service.

Need Help?

If you find yourself in a place where you need help, academically or otherwise, please review these Step-by-Step Help Topics.

Other Important Resources

- **Protect the Pack FAQs**

- **NC State Protect the Pack Resources for Students**

- **Academic Success Center:** Tutoring, drop in advising, career and wellness advising.

- **NC State Keep Learning:** Also includes tips for students opting to take courses remotely.

- **Introduction to Zoom for students**

- **Learning with Moodle:** A student's guide to using Moodle.

- **NC State Libraries Technology Lending Program**

Additional Information

Students are responsible for reviewing the NC State University Policies, Rules, and Regulations (PRRs) which pertain to their course rights and responsibilities, including those referenced both below and above in this syllabus:

- Equal Opportunity and Non-Discrimination Policy Statement with additional references here.

- Code of Student Conduct

References

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[7] Umut Dur, Scott Duke Kominers, Parag A Pathak, and Tayfun Sönmez. Reserve design: Unintended consequences and the demise of boston's walk zones. *Journal of Political Economy*, 126(6):2457–2479, 2018.

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[9] Ezekiel J. Emanuel, Govind Persad, Ross Upshur, Beatriz Thome, Michael Parker, Aaron Glickman, Cathy Zhang, Connor Boyle, Maxwell Smith, and James P. Phillips. Fair allocation of scarce medical resources in the time of covid-19. *New England Journal of Medicine*, 382(21):2049–2055, 2020.

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[15] Parag A Pathak, Tayfun Sönmez, M Utku Ünver, and M Bumin Yenmez. Fair allocation of vaccines, ventilators and antiviral treatments: leaving no ethical value behind in health care rationing. *arXiv preprint arXiv:2008.00374*, 2020.

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[20] William Thomson. *How to Divide When There Isn't Enough*. Number 62. Cambridge University Press, 2019.

[21] Hal R Varian. How to build an economic model in your spare time. *The American Economist*, 61(1):81–90, 2016.

[22] H Peyton Young. On dividing an amount according to individual claims or liabilities. *Mathematics of Operations Research*, 12(3):398–414, 1987.

[23] H Peyton Young. *Equity: in theory and practice*. Princeton University Press, 1995.