

PUBP 4414/6414: Technology, Innovation, and Policy

Syllabus

Alan C. Marco
alan.marco@pubpolicy.gatech.edu

Introduction

Description: Theories and concepts of technological innovation and diffusion, economic development, and the role of public and private institutions in technological development at the firm, industry, regional, national, and international levels.

The main goal of this course is to familiarize students with the literature on technological change and innovation, including both theoretical concepts and empirical ones. Themes will cover:

- The relationship between technological change and economic growth
- Technological diffusion and the localization of knowledge flow
- Knowledge spillovers
- Public and private investment and the innovation process
- Technology and jobs
- Policy, with particular attention paid to intellectual property

Historically and globally technology is the primary driver of economic growth. Thus, understanding the innovation process and technological change are critical for understand growth. The research process and knowledge accumulation are fundamental inputs to the innovation process; but, they are also subject to market failures in terms of positive knowledge spillovers. So, they are historically one of the areas where policy intervention is expected.

Required Textbook: Scotchmer, Suzanne (2006). Innovation and Incentives. MIT Press.

<https://mitpress.mit.edu/9780262693431/innovation-and-incentives/>

We will probably read four to five chapters, but it is also a good resource.

Prerequisites

Because we will be reading economics and empirical papers, it is strongly recommended that students have at least **one economics course** and enough **statistics** to be familiar with regression analysis. See below for more information.

SEE OTHER COURSE DOCUMENTS IN CANVAS SYLLABUS/RESOURCES FOR MORE DETAILS

Course Requirements

1. Class participation/discussion	25
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2. Midterm exam/project	25
3. Final exam/project	25
4. Reading notes	25

Grade calculation

- Main grade: Your final grade will be a weighted average of items 1 – 3 above.
- Reading notes will be used to adjust your main grade up or down. They will be graded on a check-minus/check/check+plus basis. Most will receive a check. Check-plus will bump up your grade a bit. Check-minuses will bump them down a bit. I will still grade them on a 3/4/5 point scale, where 4s are checks. No notes = 0.

Participation

- Attendance with no voluntary participation will earn a C for the day. I will sometimes cold-call to ensure broad participation.
- Some voluntary participation will earn a B for the day. (one or two comments/questions).
- Participation with clear reference or relation to the day's readings will earn an A for the day. (one or two good comments/questions)
- Clear indication that you did not do the reading will earn a D or F for the day.

Reading Preparation and Notes

- Students are expected to do the required readings in advance of the discussion day. Some readings will go beyond your ability to fully internalize; I recognize that in assigning them. Do your best. My expectations are in line with your background.
- If there are figures or tables in papers, be absolutely sure you are prepared to discuss/interpret those for the class. At the very least you should be able to explain why you found the figure difficult to understand.
- For each class period where we have an external reading, you are expected to submit your notes prior to class (like preparing a brief in law school).
- Your notes should reflect what you would usually prepare for a reading (but maybe slightly more readable, understandable, organized). Outline or bullet points are preferred. It should not be polished prose.
- What to include? Observations, main points, questions you have. Things that are interesting, or critiques. Interesting quotes, passages you'd like to discuss, or passages that you found confusing (if they relate to the main message of the paper). You may consider finding a more recent paper that cited the paper to see what other authors have said. Or, a contrasting view. Make key observations/questions the leading section. Additional information, external resources, etc. should be a separate section.
- You do NOT need to summarize the paper, unless that's helpful for you. Certainly don't just copy/paste the abstract. I just want to see what you've prepared for discussion. If you do include a summary for yourself, create a separate section for it so that I can skip it.
- You should NOT give me AI slop. You are welcome to use it for your own purposes, but it is not a substitute for reading the paper.

It should be at least half a page. I wouldn't expect more than a full page **of your own content** (i.e., not including quotes from the article). I'll let you know if I think things need to be improved.

- **Notes are due prior to class.** Upload them to Teams/Canvas (or wherever I've told you to put them) at least an hour before class (or by the assignment deadline).

- **Always submit on time.** You should upload whatever you have at that time, even if you haven't finished or didn't have time to make it look good. I reserve the right to give a zero for late notes.

Bad on time notes followed > late notes > no notes

Absence

- This is a discussion based class; attendance is a pre-requisite for participation. Notes are due even (especially) if you don't come to class.
- Let me know if you cannot attend class. Follow email protocol—in the subject line: “4414/6414 firstname lastname absent MM/DD.” Put your justification in the body of the email.
- **Amnesty:** What if I'm not prepared for class?
 - If you're not prepared, just tell me that you didn't have time to do the reading. You get one amnesty class for the course.

Econ and Stats Expectations

Economics

- Basic supply and demand, market equilibrium, efficiency, opportunity cost
- Basic marginal analysis (e.g., marginal benefit equals marginal cost in equilibrium)
- The effects of taxes and subsidies
- Market failures, especially externalities, but also: public goods, market power, and imperfect information
 - For this class in particular, you should know about positive externalities like R&D spillovers or knowledge spillovers.

Stats

- Statistical significance
- Basic linear regression (OLS, ordinary least squares)
 - How to interpret regression coefficients
- Causal inference
 - Correlation versus causation
 - Randomized Control Trials (RCTs) as the “gold standard”
 - Experimental versus quasi-experimental research

Resources

Economics

- Jacob Clifford <http://www.youtube.com/@JacobAClifford>
 - Micro review <https://youtu.be/1UxA6JzoT-4?si=vOrrPLUtQemIjnuO>
- Economics in many lessons <https://www.youtube.com/@EconomicsinManyLessons>
- Khan Academy <https://www.khanacademy.org/economics-finance-domain/microeconomics>

Stats

- TBA

Institute boilerplate

CORE Impacts

This is a Core IMPACTS course that is part of the Social Sciences area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question:

- How do I understand human experiences and connections?

Completion of this course should enable students to meet the following Learning Outcomes:

- Students will effectively analyze the complexity of human behavior, and how historical, economic, political, social or geographic relationships develop, persist or change.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

- Intercultural Competence
- Perspective-Taking
- Persuasion

Honor Code

Students in this class are expected to abide by the Georgia Tech Honor Code and avoid any instances of academic misconduct. If any violations are discovered, applicable Georgia Tech policies will be strictly followed.

Accommodations

Students who have a disability and anticipate needing accommodations in this course should make arrangements with the Office of Disability Services in order to obtain appropriate documentation. Students should also meet with the instructor outside of class as soon as possible (preferably in the first week of the semester) so that an appropriate course of action can be identified.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. [Review Georgia Tech's Honor Code](#) and the [student Code of Conduct](#). Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, [contact the Office of Disability Services](#) (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. [The Student-Faculty Expectations](#) articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class

Campus Resources for Students

- Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.
- [Academic Resources](#) such as the Communications Center, Language Institute, Library, Catalog, Registrar, resources for conducting research, Advocacy and Conflict Resolution resources, and how to manage unexpected situations that may impact your academic performance;
- [Student Resources](#) such as Campus Services, Child Care/Family programs, Health & Wellness, Career Services, and the Student Resource Guide; and
- *[Professional Development](#) such as the programming from the Career Center and other professional development resources and events*
- At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A [comprehensive list](#) of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being ([student-resource-guide \(gatech.edu\)](https://student-resource-guide.gatech.edu))