

# Technology, Innovation, and Policy

PUBP 4414/6414

## Syllabus

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### 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

Class participation/discussion	25
Paper reviews/reading notes	25
Midterm exam/project	25
Final exam/project	25

Students are expected to do the required readings in advance of the discussion day. Each exam may have a project in lieu of the exam. 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.

## Reading Notes

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.

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.

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) by the time class starts.
- **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.
- **Revised notes.** I will allow you to upload a revised version, only if you feel like you really need to.
- **File format.**
  - **Initial notes:** MMDD\_lastname.pdf, where MMDD is the class meeting date (without year). Why? So that I can easily sort and match to the class roster. I appreciate it.
    - For this reason, do NOT add the year.
    - Do NOT use firstname.
    - DO use a leading zero so that there are always four digits.
  - **Revisions:** MMDD\_lastname\_v2.pdf, where MMDD is the class meeting date.
    - Do NOT overwrite the first one. (It saves me from having to find the version history). This is better than late notes.

**On time notes > Bad on time notes followed by v2 > late notes > no notes.**

## Absence

- This is a discussion based class; attendance is a pre-requisite for participation.
- 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.
  - Notes are due even (especially) if you don't come to class.

## 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](https://success.gatech.edu/tutoring), email us at [tutoring@gatech.edu](mailto: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))