INTA 3044/8803 – Global Politics of Technology

FALL 2023

MW, 2:00-3:15pm
760 Spring St NW Room 235

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Office Hours: By Appointment; Office - Scheller 4106
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OVERVIEW

In this course, we will examine the economic and political dynamics that influence how regulations governing technology are created and adopted around the world. We also explore why some countries are better than others at innovating.

Goals

By the end of this course, students will be able to:

- Identify, compare and evaluate different sets of policies and institutions (finance, research & development, skills, other) governing different types of technologies across countries;
- Apply theoretical frameworks towards understanding science, technology, and innovation and its impact on economic change;
- Trace a technology over time alongside regulations/institutions designed to govern it;
- Research, analyze and write a Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis and Strategy Recommendation study. Alternatively, students may choose to prepare a policy memo.
This course will investigate the economic and political dynamics technological innovation and the role that policies and institutions play in its diffusion globally. It is divided into four modules:

PART I  Defining and Understanding Science, Technology, and Innovation

PART 2 Explaining the Process of Technological Innovation, Diffusion, and Economic Change: Some Theoretical Frameworks and Cases

PART 3 The Role of Regulatory and Technology Standards

PART 4: Governance, Globalization, and STI Policy

We ask: How do we define institutions, particularly science and technology ones? What do we mean by technology? Why do countries adopt similar or different science, technology, and innovation strategies, regulations, and standards in support of economic growth? What are the different paths that technological innovation and diffusion take and how do they impact productivity and competitiveness? Who governs these processes and how? Ultimately these questions help us understand the role of government, markets, and society in shaping global technological and economic change. While the subject is vast, the scope of the course helps keep it manageable. It draws from the scholarly and popular literature as well as industry examples such as digital technology, agribusiness, energy, life sciences and advanced manufacturing. The course also compares US technology innovation strategies with those of Europe, Asia, and selected developing countries, among others.

The course is open to advanced undergraduates and graduate students. Prior work in political science or economics is strongly recommended.

I have tried to keep your weekly readings to a manageable level. The course delves more deeply into economic, political, and technological elements. However, you are given flexibility to choose research topics of particular interest to you.

Please keep apprised of current issues regarding the economic and political dynamics of technological innovation by reading a good daily or weekly publication such as The Wall Street Journal, The Financial Times, The New York Times, and/or The Economist. I will also be posting current event articles on Canvas from time to time. These will help link some of the more conceptual themes in the course with real world events.
COURSE REQUIREMENTS

Papers, Projects, Participation and Grades:

**Research Paper: 40%**. The course requires a 15-20-page, double-spaced research paper (not an essay). The study should examine a research question of your choosing related to any one of the syllabus’ four modules or their subtopics. (Portions of paper due throughout the course).

**Policy Memo: 35%**. Choose a fellow student to collaborate on researching, analyzing, and writing a 15-20-page, double-spaced Policy Memo. Choose government department or political institution that is confronted by a major global technology issue/opportunity/challenge related to climate change, nuclear energy, digital security, health, fintech, artificial intelligence (AI), or another of your choosing. The instructor will provide sample formats. The goal is to gain experience in clearly writing a Policy Memo that persuades policy/strategy decision-makers to support what you argue to be the most efficient and effective policy/strategy. Details to be discussed at the beginning of the course.

**Class Participation: 25%**. Class participation is critical to the success of this course. I expect each student to attend all classes and read all assignments prior to the start of each class. In addition, your active engagement in discussions, group projects, and presentations are required:

1. A 20-minute power-point presentation/critical analysis of an assigned reading for that class (given the number of students in the course, it will be necessary to partner with another student), and
2. A 5-minute report/presentation on the latest technology/regulatory news. The report should define the technology/regulation, address why you think it is important, identify risks, and anticipate how it might impact society (positive and negative).
3. A major in-class group project requires students to choose a technology (sample list provided), trace and compare its evolution in two countries alongside regulatory regimes and other institutions from creation to adoption or displacement. Your group will then present your findings to the class. Groups will be formed during the class prior to the first day of the project. These elements comprise your participation grade. All views are welcome as we all learn from each other’s insights.

**Student Honor Code/Academic Honesty**: Adherence to the Student Honor Code is expected. The Academic Honor Code is explained in detail in the GIT General Catalogue or at http://www.deanofstudents.gatech.edu/Honor/. Any instance of suspected academic
dishonesty (e.g., plagiarism; cheating on an examination) will be referred to the Office of the Dean of Students for disciplinary action.

**Electronic Media:** Please turn off your cell phone before class. Laptops are permitted ONLY for research and reference during class.

**Canvas:** Canvas will be used as a general bulletin board for the class and site for materials and added readings. It is your responsibility to access this important information source often.

**Special Note:** The instructor reserves the right to change session topics, project due dates, assignments throughout the semester. However, students will be given adequate notice of changes.

**Use of Artificial Intelligence Tools (ChatGPT + Others)**

To be discussed in class.

Be aware of the limits of ChatGPT, such as the following:

- If you provide minimum-effort prompts, you will get low-quality results. You will need to refine your prompts in order to get good outcomes. This will take work.

- Don’t trust anything it says. If it gives you a number or fact, assume it is wrong unless you either know the answer or can check with another source. You will be responsible for any errors or omissions provided by the tool. It works best for topics you understand.

- AI is a tool, but one that you need to acknowledge using. Please include a description at the end of any assignment that uses AI explaining what you used the AI for and what prompts you used to get the results. Failure to do so is in violation of academic honesty policies.

- Be thoughtful about when this tool is useful. Don’t use it if it isn’t appropriate for the case or circumstance.

- If you use AI on any assignment, that assignment will be held to a higher standard when grading.
# COURSE READINGS

*Readings designated with a “◆” symbol are downloadable from Canvas*

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<thead>
<tr>
<th>PART I</th>
<th>Defining and Understanding Science, Technology, and Innovation</th>
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<tr>
<th>WEEK 1</th>
<th>Course Introduction, Questions, and Concepts</th>
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| Aug. 21 | Course Introduction  
Student Introductions  
Syllabus Review |

Aug. 23

**How do we define science? Technology? Innovation?**

**How do we classify industries in terms of their technology intensity?**
◆ [https://www.oecd.org/sti/ind/48350231.pdf](https://www.oecd.org/sti/ind/48350231.pdf) (technology intensity definition and classification)

**How do we measure and compare science, technology, and innovation status among countries?**

OECD Main Science and Technology Indicators (comparing countries)  

Data to compare STI status among countries – STI Scorecard  
[https://www.oecd.org/sti/scoreboard.htm#explore](https://www.oecd.org/sti/scoreboard.htm#explore)

Additional sources:  
Key STI statistics, databases and publications:  
[https://www.oecd.org/sti/stistatistics.htm](https://www.oecd.org/sti/stistatistics.htm)  
Science, technology and innovation policy reports/links:  

**What are the STI key issues and trends?**

<table>
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<th>WEEK 2</th>
<th>Historical Context: Technology Cases</th>
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<th>PART 2</th>
<th>Explaining the Process of Technological Innovation, Diffusion and Economic Change: Some Theoretical Frameworks and Cases</th>
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<th>WEEK 3</th>
<th>The Politics of Innovation</th>
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<td>Sept. 4</td>
<td>SCHOOL HOLIDAY – LABOR DAY – NO CLASS</td>
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<td>Sept. 6</td>
<td>◆Johan Schot, W. Edward Steinmueller, Transformative change: What role for science, technology and innovation policy?: An introduction to the 50th Anniversary of the Science Policy Research Unit (SPRU) Special Issue, Research Policy, Volume 48, Issue 4, 2019, Pages 843-848,</td>
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**Country Innovation Strategy Cases: China, US, and Sweden**

**China:**

United States:
◆ US Inflation Reduction Act – Clean Energy - Guidebook

Sweden:

Recommended:
--Taylor, T. (2016). The politics of innovation: why some countries are better than others at science and technology. Oxford University Press. (Chapters 1 and 4)

| WEEK 4 | The Economics of Innovation: Foundational Theories |
Sept. 11  ◆ J.A. Schumpeter (1911) The Theory of Economic Development, Ch. 2,4,6


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**WEEK 5  Innovation Systems: Institutions, Networks and Organizations**


Recommended:

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**WEEK 6  Diffusing Technologies and Institutions**

WEEK 7 | IN-CLASS GROUP PROJECT

Oct. 2 | IN-CLASS GROUP PROJECT - Tracing and Comparing Technology Diffusion, Adoption or Displacement between Countries

Oct. 4 | IN-CLASS GROUP PROJECT - Tracing and Comparing Technology Diffusion, Adoption or Displacement between Countries

We will be forming subgroups and each group will select a technology to trace based on the resources listed below OR a technology of your own choosing.

See James Fallow’s article - “The 50 Greatest Breakthroughs Since the Wheel” in The Atlantic Magazine in Canvas for a historical ranking of major technological breakthroughs.

More recent technological advances:

Privacy & Security: Cyber Security technologies
Space Technology
Health: Stem cells or robotics
Finance: Blockchain, Digital Currencies
Advanced manufacturing/other: Artificial Intelligence
Energy & Environment: Clean technologies; alternative energy (wind, solar, wave etc.)
Food/Food processing: Genetically modified organisms (GMOs); robots; delivery apps etc.

**WEEK 8**  
**IN-CLASS GROUP PROJECT PRESENTATIONS**

Oct. 9  
**SCHOOL HOLIDAY - FALL BREAK – NO CLASS**

Oct. 11  
IN-CLASS GROUP PROJECT + Presentations

**WEEK 9**  
**Technological Innovation: Capacity and Measures**

Oct. 16  
IN-CLASS GROUP PROJECT + Presentations

Oct. 18  

◆ Andrew Watkins, Theo Papaioannou, Julius Mugwagwa, Dinar Kale, National innovation systems and the intermediary role of industry associations in building institutional capacities for innovation in developing countries: A critical review of the literature, Research Policy, Volume 44, Issue 8, 2015, Pages 1407-1418,


Recommended:

Economic Perspective - Revisited


## PART 3  The Role of Regulatory and Technology Standards

What are regulatory and technology standards? How are they created, diffused globally and what are their effects?

### WEEK 10  Understanding and Creating Standards

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<th>Activity</th>
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**Case:**

- Central bank digital currencies: foundational principles and core features. [https://www.bis.org/publ/othp33.htm](https://www.bis.org/publ/othp33.htm)


### WEEK 11  Cases


PART 4 Governance, Globalization, and STI Policy

WEEK 12 Who Governs? Science, Technology, and Innovation (STI) Policy


Recommended:

**WEEK 13** | **Channels of Technological Innovation: FDI and Trade**

How does FDI and global trade spur innovation? What role do governments and the private sector play in governing the process?

Nov. 13  
https://www.ft.com/content/8008075d-1d38-4886-b42f-c2d66f147394?shareType=nongift  
https://www.ft.com/content/92ce5bb1-2168-4da3-b4de-0e0821a4fb02?shareType=nongift


Nov. 15  

*RESEARCH PAPER DUE Nov. 15*

**WEEK 14** | **Special Issue: Privacy & Security**
Nov. 20


Nov. 22  SCHOOL HOLIDAY – THANKSGIVING – NO CLASS

WEEK 15  Special Issue: Ethics in Science & Technology

Nov. 27

https://www.google.com/books/edition/The_Ethics_of_Invention_Technology_and_the_Human_Future/1_nBqZCgAAQBAJ?hl=en&gbpv=1&dq=The+Ethics+of+Invention+Technology+and+the+Human+Future.+Jasanoff&printsec=frontcover


Nov. 29


WEEK 16  Final Instructional Week

Dec. 4  Final Instructional Day
Course Review
(No Final Exam)