Global Politics of Technology

Last Updated: Mon, 01/05/2026

Course prefix: INTA

Course number: 3044

Section: A

CRN (you may add up to five):
35074

Instructor First Name: Diane

Instructor Last Name: Alleva

Semester: Spring

Academic year: 2026

Course description:

This course will investigate the economic and political dynamics of technological innovation and the role of strategies, policies, regulations, and other institutions in its global diffusion. We also explore why some countries are better at innovation than others.

The course is divided into four modules:

PART I	Defining and Understanding Science, Technology, and Innovation
PART 2	Governing Technological Innovation & STI Policy
PART 3	Creating Regulatory and Technology Standards
PART 4:	Special Issues

We ask: What do we mean by science and 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 course's scope helps keep it manageable. It draws on the scholarly and popular literature, as well as industry examples. The course also compares US technology innovation strategies with those of Europe, Asia, and selected developing countries.

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 manageable. The course delves more deeply into economic, political, and technological elements. However, you are given the 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 learning outcomes:

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 their impact on economic change;
- Trace and compare a technology over time between two countries alongside regulations/institutions designed to govern it;
- Establish good research questions;
- Strengthen your capability to develop persuasive arguments;
- Strengthen your critical analysis and presentation skills;
- Research, analyze, and write a paper on any of the course module topics, thereby deepening their understanding of the phenomenon under question.

Required course materials:

COURSE READINGS

Readings designated with a "u" symbol are downloadable from Canvas

Course readings are subject to change.

The professor will provide sufficient advanced notice of any changes/substitutions.

PART I Defining and Understanding Science, Technology, and

Innovation

WEEK 1

Course Introduction

Jan. 12 Course Introduction

Student Introductions

Syllabus Review

Review of Key Concepts/Definitions

Jan. 14 **Review of Key Concepts/Definitions Cont…**

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

OECD Main Science and Technology Indicators (comparing countries)

https://www.oecd.org/en/data/datasets/main-science-and-technology-indicators.html

Data to compare STI status among countries – STI Scorecard

https://www.oecd.org/sti/scoreboard.htm#explore

WEEK 2

Historical Context: Technology, Invention, & Innovation Cases

Jan. 19 No Class – MLK Day

Jan. 21 uFallows, James (2013), The 50 Greatest Breakthroughs Since the Wheel, The Atlantic, (Nov. 2013).

BBC Science Focus experts (2025). The 25 most powerful ideas of the 21st century (so far), picked by the world's top thinkers. Nov. 2025. https://www.sciencefocus.com/future-technology/experts-pick-the-25-most-significant-breakthroughs-of-the-21st-century

uDavid, Paul, 1985. Clio and the Economics of QWERTY, American

Economic Review, American Economic Association, vol. 75(2), pages 332-37, May.

uF.M. Scherer (1965), Invention and Innovation in the Watt-Boulton Steam-Engine Venture, Technology and Culture, Vol. 6, No. 2 (Spring, 1965), pp. 165-187.

PART 2 Governing Technological Innovation & STI Policy

WEEK 3

The Changing Role of the State

Jan. 26 uMazzucato, Marianna, 2013. The Entrepreneurial State. Introduction & Summary + Chapters 2, 3, 4.

uBlock, Fred, 2008. Swimming against the current: The rise of a hidden developmental state in the United States. Politics & Society, 36(2), pp.169-206

Jan. 28 **What are the STI key issues, trends, and governance recommendations?**

OECD (2025), OECD Science, Technology and Innovation Outlook 2025 - Driving Change in a Shifting Landscape, OECD Publishing, Paris https://www.oecd.org/en/publications/oecd-science-technology-and-innovation-outlook-2025_5fe57b90-en.html

(Executive Summary + Chapters 1, 6, 7)

uJohan 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.

uMeissner, D. (2014). Approaches for developing national STI strategies. STI Policy Review, 5(1), 34-56.

WEEK 4

Country Cases

Feb. 2 No Class – Read Cases (listed on Feb. 4 class, below) On Own

Feb. 4 **Cases: China, US, and the EU**

China:

World Economic Forum. How China's 15th five-year plan signals a new phase of strategic adaptation. Oct 30, 2025. https://www.weforum.org/stories/2025/10/how-china-s-15th-five-year-plan-signals-a-new-phase-of-strategic-adaptation/#:~:text=China%20sketched%20out%20the%20country's,juncture%20for%20China's%2

United States:

uUS Department of Energy. Energy Department Launches 'Genesis Mission' to Transform American Science and Innovation Through the AI Computing Revolution. November 29, 2025. https://www.energy.gov/articles/energy-department-launches-genesis-mission-transform-american-science-and-innovation

uHarrington, J. (July 1, 2021). What the U.S. Innovation and Competition Act Gets Right (and What It Gets Wrong). CSIS. https://www.csis.org/analysis/what-us-innovation-and-competition-act-gets-right-and-what-it-gets-wrong

European Union:

uEuropean Commission: Directorate-General for Research and Innovation, *Horizon Europe strategic plan 2025-2027*, Publications Office of the European Union, 2024, https://data.europa.eu/doi/10.2777/092911

WEEK 5

Innovation Ecosystems: Institutions, Networks, Organizations, and Collaboration

Feb. 9 uBinz, C., and B. Truffer. 2017. “Global Innovation Systems—A Conceptual Framework for Innovation Dynamics in Transnational Contexts.” Research Policy 46, no. 7: 1284–1298.

uLundvall, B. Å. (2007). National innovation systems—analytical concept and development tool. Industry and innovation, 14(1), 95-119.

Feb. 11 uXin, P., Arshad, N. I., Mohamad, U. H., Huang, Y., & Su, S. J. (2025). Reframing the Triple Helix for Sustainability: A Mechanism-Based Framework for University–Industry–Government Collaboration in Global Innovation Systems. European Journal of Education, 60(4), e70361.

Recommended:

uCooke, P. (2001). Regional innovation systems, clusters, and the knowledge economy. Industrial and corporate change, 10(4), 945-974.

uMalerba, F. (2002), Sectoral systems of innovation and production, Research Policy, 31(2), 247–264.

WEEK 6

Diffusing Technologies and Institutions

Feb. 16 **u**Jeffrey Ding. Technology and the Rise of Great Powers: How Diffusion Shapes Economic Competition. Princeton University Press. Asia Policy 20.4 Roundtable with Daniel W. Drezner, Xinyue Wei, Etel Solingen, David C. Kang, Victor Seow, and Jeffrey Ding. October 29, 2025. https://www.nbr.org/publication/jeffrey-dings-technology-and-the-rise-of-great-powers-how-diffusion-shapes-economic-competition/?utm_source=substack&utm_medium=email

uMario Gruber, An evolutionary perspective on adoption-diffusion theory, Journal of Business Research, Volume 116, 2020, Pages 535-541.

uQuang Bui. A Review of Innovation Diffusion Theories

and Mechanisms. Proceedings of the Twentieth DIGIT Workshop, Fort Worth, Texas, December 2015

Feb. 18 **Cases:**

uAddisu A. Lashitew, Rob van Tulder, Yann Liasse, Mobile phones for financial inclusion: What explains the diffusion of mobile money innovations?, Research Policy, Volume 48, Issue 5, 2019, Pages 1201-1215.

uJacobsson, S., & Johnson, A. (2000). The diffusion of renewable energy technology: an analytical framework and key issues for research. Energy policy, 28(9), 625-640.

uCasper, S. (2006). 21 Exporting the Silicon Valley to Europe: How Useful is Comparative Institutional Theory? Innovation, Science, and Institutional Change: A Research Handbook: A Research Handbook, 483.

PART 3 Creating Regulatory and Technology Standards

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

WEEK 7

Understanding and Creating Regulatory Standards

Feb. 23 u TBD - Abbott, K. & Snidal, D. (2009). CHAPTER TWO. The Governance Triangle: Regulatory Standards Institutions and the Shadow of the State. In W. Mattli & N. Woods (Ed.), The Politics of Global Regulation (pp. 44-88). Princeton: Princeton University Press. https://doi.org/10.1515/9781400830732.44

uMoss, D. A., & Carpenter, D. (2014). Conclusion: A focus on evidence and prevention. Preventing regulatory capture: Special interest influence and how to limit it, 451, 452.

uMajone, G (1997), 'From the Positive to the Regulatory State: Causes and Consequences of Changes in the Mode of Governance' *Journal of Public Policy* 17(2), 139-68.

Feb. 25 **Cases:**

uHow the EU botched its attempt to regulate AI - Can Brussels balance its desire to set the guardrails for tech with its need to attract investment? *Financial Times*. November 20, 2025. https://on.ft.com/49vD8Ts

u"The digital divide over consumer data widens: Regulatory divergence in America, Europe and Asia spells trouble." *Financial Times.* July 26, 2017.

WEEK 8

Understanding and Creating Technology Standards

March 2 u Paul Moritz Wiegmann, Henk J. de Vries, Knut Blind, (2017). **Multi-mode standardisation: A critical review and a research agenda.** Research Policy. Pages 1370-1386.

Cases:

uFunk, J. L., & Methe, D. T. (2001). **Market-and committee-based mechanisms in the creation and diffusion of global industry standards: the case of mobile communication.** Research Policy, 30(4), 589-610.

uCentral bank digital currencies: foundational principles and core features. https://www.bis.org/publ/othp33.htm

https://www.globalasia.org/v15no4/feature/digital-currency-wars-us-china-competition-and-economic-statecraft_vinod-k-aggarwaltim-marple

March 4 **Cases:**

World Economic Forum (October 2020). Global Standards Mapping Initiative: An overview of blockchain technical standards. White Paper.

http://www3.weforum.org/docs/WEF_GSMI_Technical_Standards_2020.pdf

uKim, D. H., Lee, H., & Kwak, J. (2017). Standards as a driving force that influences emerging technological trajectories in the converging world of the Internet and things: An investigation of the M2M/IoT patent network. Research Policy.

WEEK 9

IN-CLASS GROUP PROJECT

March 9 IN-CLASS GROUP PROJECT - Tracing and Comparing Regulatory and Technology Diffusion, Adoption or Displacement between Countries

March 11 IN-CLASS GROUP PROJECT - Tracing and Comparing Regulatory and 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:

Artificial Intelligence/Tools/Platforms

Privacy & Security: Cyber Security technologies

Space Technology

Health: Stem cells, robotics

Finance: Blockchain, Digital Currencies

Digital Twins (in manufacturing)

Additive manufacturing

Energy & Environment: Clean technologies; alternative energy (wind, solar, wave, hydrogen capture, etc.)

Food/Food processing: Genetically modified organisms (GMOs); robots; delivery apps etc.

WEEK 10

IN-CLASS GROUP PROJECT PRESENTATIONS

March 16 IN-CLASS GROUP PROJECT + Presentations

March 18 IN-CLASS GROUP PROJECT + Presentations

WEEK 11

BREAK

March 23 NO CLASS – SPRING BREAK

March 25 NO CLASS – SPRING BREAK

PART 4 Special Issues

WEEK 12

Governing The Complexities of AI

This section subject to changes

March 30 uGijs Diercks, Henrik Larsen, Fred Steward, Transformative innovation policy: Addressing variety in an emerging policy paradigm, Research Policy,

Volume 48, Issue 4, 2019, Pages 880-894.

April 1 uFarrell, Henry. AI as Governance. Annual Review of Political Science, Volume 28, 2025, Pages 375-392 https://doi.org/10.1146/annurev-polisci-040723-013245

WEEK 13

Governing The Complexities of Climate Change

April 6 uSchreurs, M. A. (2008). From the bottom up: local and subnational climate change politics. *The Journal of Environment & Development*, *17*(4), 343-355.

April 8 In-Class work on paper (professor will provide feedback as requested)

RESEARCH PAPER DUE April 8

WEEK 14

Governing Privacy & Security

This section subject to changes

April 13 uKshetri, N. (2013). Privacy and security issues in cloud computing: The role of institutions and institutional evolution. Telecommunications Policy, 37(4), 372-386.

Weber, R. H. (2010). Internet of Things–New security and privacy challenges. Computer law & security review, 26(1), 23-30.

April 15 uMention, A. L. (2021). The age of FinTech: Implications for research, policy and practice. The Journal of FinTech, 1(01), 2050002.

WEEK 15

Governing Ethics in STI and Policy

April 20 M. Ladikas et al. (eds.) (2015), Science and Technology Governance and Ethics: A Global Perspective from Europe, India and China: Introduction, Chapters 1 and 8.

April 22 The Ethics of Invention Technology and the Human Future. Selin, C. Book Review. Science, 2016 Aug 19, Vol.353(6301), pp.756-756 (Sheila Jasanoff)

-- Jasanoff, S. (2016). The ethics of invention: technology and the human future. WW Norton & Company. Chapter 1.
https://www.google.com/books/edition/The_Ethics_of_Invention_Technology_and_t/nBqZCgAAQBAJ?hl

IN-CLASS VIDEO: The Ethics of Invention | Prof Sheila Jasanoff | Talks at Google

https://www.youtube.com/watch?v=aT1djsHSxMY

WEEK 16

Final Instructional Week

April 27 Final Instructional Day

Course Review & Debate!

Grading policy:

COURSE REQUIREMENTS

Research Paper, Projects, Participation, and Grades:

40% - Research Paper. 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's four modules or their subtopics. (Portions of paper are due throughout the course).

25% - A 20-minute presentation/critical analysis of an assigned reading for that class.

35% - In-class learning activities and a major in-class group project. The major 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.

Extra Credit - A 5-minute report/presentation on the latest technology/regulatory news. The report should define the technology/regulation, explain why it is important, identify risks, and anticipate how it might impact society (both positively and negatively).

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

Attendance policy:

Class Attendance Policy: Class attendance is mandatory. To succeed in the course, students must regularly engage with substantive, high quality contributions to discussions and in-class projects.

Academic honesty/integrity statement:

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.

Generative and Editorial Artificial Intelligence (AI) Tool Use is only permitted in this class with proper citation. Per GaTech's Honor Code, students may not submit any work generated by an AI program as their own. If students include material generated by an AI program, it should be cited like any other reference material (with due consideration for the quality of the reference, which may be poor). When/if students use AI platforms in their assignments, they should write a note to clarify where in the process they used AI, include the prompt used to generate the material, and which platform(s) were used. See this article for how to cite AI properly: How to cite ChatGPT https://apastyle.apa.org/blog/how-to-cite-chatgpt

Generative AI derives its output from other sources used to train the models without citation. This is plagiarism. Students should be aware that the material generated by these programs may be inaccurate, incomplete, biased or otherwise problematic. As most assignments in this class will require students to relay their own thoughts and analyses, if the professor suspects the heavy use of AI to complete an assignment the student may be required to demonstrate their knowledge orally in an informal one-on-one meeting with the professor to make sure the ideas are their own. Uncited, high use of AI (as identified by TurnItIn) will be reported to OSI for further adjudication.

Core IMPACTS statement(s) (if applicable):

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 their impact on economic change;
- Trace and compare a technology over time between two countries alongside regulations/institutions designed to govern it;
- Establish good research questions;
- Strengthen your capability to develop persuasive arguments;
- Strengthen your critical analysis and presentation skills;
- Research, analyze, and write a paper on any of the course module topics, thereby deepening their understanding of the phenomenon under question.