STS 201 – Understanding Technological Society: Intro STS

Program in Science, Technology & Society – New Jersey Institute of Technology

Course Syllabus
FALL 2025

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Office Hours: by appointment (email me in advance)

Weekdays: Tuesdays and Fridays
Time: 1 – 2:20PM
Room: CKB 320
Course materials: canvas.njit.edu

Course description

We are constantly debating the importance of technologies in our lives, but rarely discuss our role in making technologies economically, politically, ethically, and culturally feasible. Also, less time is dedicated to the examination of how human values and beliefs affect the design, development, and diffusion of new technologies in society. This course aims to encourage students to adopt multiple approaches from humanities and social sciences to think critically about implications of technologies in modern society.

This course serves as an introduction to the social sciences: anthropology, communication, economics, sociology, geography, history, political science, sustainability, and psychology (and their influence on technology, society, and technological society). Much of the course focuses on technology and its role in addressing and improving local, national, and global issues, as well as its effect and relationship with the global ecological system and sustainability.

A problem-centered and task-oriented course that integrates social science theory and practice into the leading public issues of a technological society. Students learn critical thinking through hands-on assignments. The course emphasizes student understanding of social institutions that directly affect technological development and professional careers. This course can be used to satisfy either the three credit 200 GER in History and Humanities or the three credit GER in Social Sciences, but not both. No prerequisites required.

Course learning outcomes

STS 201 aims to teach students to:

- provide theories and tools for students to analyze multiple human factors that have led society to pursue scientific and technological entrepreneurships in the past and contemporary world;
- navigate through introductory-level STS concepts, theoretical frameworks, and debates;
- examine scientific and technological development critically and to be aware of its ethical, cultural, organizational, and socio-economic challenges;
- advance in future professional projects using critical thinking, humanity and social justice-driven judgment, personal analytical views, and published resources;
- deliver strong arguments about the relationship between science, technology, and society.

Course materials

All course materials will be available at the course website **(https://canvas.njit.edu)**. You should check the syllabus often. Materials needed for your next class will be available right after the end of the previous class. You will be alerted in classroom if there ANY changes to the scheduled readings.

Academic Integrity

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing, or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.

If you are uncertain as to what constitutes plagiarism, please refer to the article entitled "Plagiarism Lines Blur for Students in the Digital Age" available on the course website. Note on the Use of Generative Artificial Intelligence In accordance with university policies, the uncited use of generative artificial intelligence in the form of (but not limited to) ChatGPT and Grammarly is regarded as a violation of the above-referenced statement on academic integrity. If a student uses one of these technologies at any stage of the writing process without full and complete acknowledgement and attribution it will be treated as plagiarism and reported to the Office of the Dean of Students for further review. Depending on the specific circumstances, the outcome of the adjudication process may involve failure on the specific assignment or in certain instances failure for the course.

Assignments

The following activities are designed to help you achieve the class objectives.
Your grade will include these components:

- **Course Engagement (20%)**: You must attend class sessions AND engage with what is being taught. You must demonstrate that you are up to date with readings. Course engagement is a combination of your attendance and participation, i.e., capacity to actively contribute to classes' debates, questioning and discussions related to the readings and presentations.

  The most important outcome of this course is improving students' analytic skills about the ambivalence of technological systems in society, and to get introduced to concepts and theories on STS to improve critical thinking about real world problems.

- **Midterm (20%)**: The Midterm is a multiple-choice exam which will assess your understanding of course readings and key concepts. It is composed by 15 questions. Students are allowed to do consultation in printed materials.

- **Case Studies I and II (20%)**: an essay question related to a selected short article or documentary (to be done in classroom). Case studies must be based in the text interpretation, and in relation with previous readings, theories, group seminar and debates in classroom. Students are allowed to do consultation in printed materials.

- **Group seminars (20%)**: Group seminars are composed by 4-5 members AND 3 discussants (all members and discussants are selected by the Professor). Group presentation should be designed to last 30 minutes, while each discussant will have 10 mins for interventions. Themes will be distributed among student groups. I encourage students to incorporate their personal interests into selected themes, for example their knowledge about film, sci-fi, arts and culture in general, and how it relates to their themes. Students (seminar members AND moderators) will be graded by their capacity to articulate theories and literature, quality of presentations, and discussions held in classroom.

- **Final Exam (20%)**: a multiple-choice exam related to a selected short article, all course readings, seminars and discussant interventions (to be done in classroom). Responses must be based in the text interpretation, and in relation with previous readings, theories, group seminar and debates in classroom.

Verification of Presence - Academic Engagement Assignment

Beginning with the Fall 2024 semester, our process for conducting "Verification of Presence" will differ substantially from past practice. **Now students have to self-report their presence**. Instructors will no longer be required to manually take and record attendance in order to verify the presence of each student. Please, go to you Canvas section and complete the "Academic Engagement Assignment". Students will be asked to reflect on what they hope to get out of your class. Completion of this assignment will serve as verification of presence for the given student. Please note that this assignment need not be graded nor count toward the student's final grade.

Grading

Your final grade will be assigned based on the following scale:

A	=	100% - 90%
B+	=	89.99% - 86%
B	=	85.99% - 80%
C	=	79.99% - 70%
D	=	69.99% - 60%
F	=	< 60%

Course Readings

Reading materials are mainly composed by short articles, commentary pieces and YouTube videos and interviews. All materials will be provided in PDF form and available in Canvas. I expect that students come to class reasonably able to answer the question of "what did the author argue in this reading", which requires you to grasp the general argument provided by the author. If you find yourself spending too much time getting through the readings, feel free to come into office hours.

Course schedule

Readings and assignments are to be completed by the beginning of class on the date they are listed.

MODULE I: SCIENCE, TECHNOLOGY AND SOCIETY: THEORIES AND TOOLS

Week 1 – Introduction to Science and Technology Studies

- Tuesday, **September 2**: Welcome Session: Course Introduction and Syllabus.

- Friday, **September 5**: What is Science and Technology Studies?
  Readings: (A) Rohracher, H. (2015). ***Science and Technology Studies, History of***. International Encyclopedia of the Social & Behavioral Sciences, 200–205.
  (B) James Zimring (2019) ***Why Science is a Social Construct?*** Salon, 1-2. Available at https://www.salon.com/2019/12/22/why-science-is-a-social-construct/

Week 2 – Science and Technology as Infrastructures

- Tuesday, **September 9**: Infrastructures
  Reading: Star, Susan L. (1999) ***The Ethnography of Infrastructure***. American Behavioral Scientist, 43(3), 377-391. https://doi.org/10.1177/00027649921955326

- Friday, **September 12**: Knowledge and open-ended design
  Video: Nowotny H, von Seggern, H. ***Science walking:*** Helga Nowotny in a conversation with Hille von Seggern https://www.youtube.com/watch?v=Uj4CRVTfc0A&t=5s

Week 3 – Understanding Technological Change

- Tuesday, **September 16:** Scientific Revolution and Technical Change.
  Reading: Kuhn, T. (1962) ***The Structure of Scientific Revolutions***. Introduction, and II (The route to Normal Science), 1-21.

- Friday, **September 19**: Technological Innovation (or the process of creative destruction.)
  Readings: Joseph Schumpeter (1942) Capitalism, Socialism and Democracy.
  Chapter VII: ***The process of creative destruction.*** pp. 81-86].
  Why is so hard to anticipate innovation?
  Video: ***AI Can Only Do 5% of Jobs: MIT Economist Fears Crash***
  https://www.youtube.com/watch?v=unrvuUsM5vk

Week 4 – Systems of knowledge production

- Tuesday, **September 23**: Mode 1 and Mode 2 (Part I).
  Reading: Gibbons et. al. ***The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies***. [pp. 1-8].

- Friday, **September 26**: Mode 1 and Mode 2 (Part II).
  Reading: Gibbons et. al. ***The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies***. [pp. 8-16].

MODULE II CONTEMPORARY ISSUES IN TECHNOLOGICAL SOCIETIES

Week 5 – Case Study I and techno-solutionism

- Tuesday, **September 30**: **Case Study** I (*in classroom*, see *"Assignments."*)

- Friday, **October 3**: Techno-solutionism
  Reading: Nawal Arjini. ***Science will not come on a White Horse with a Solution***. The Nation. April 6, 2020. Available at https://www.thenation.com/article/society/sheila-jasanoff-interview-coronavirus/

Week 6 – Techno-racism and Gender Issues in STEM

- Tuesday, **October 7**: Techno-racism
  Reading: ***People of color have a new enemy: techno-racism***. CNN. https://www.cnn.com/2021/05/09/us/techno-racism-explainer-trnd/index.html

- Friday, **October 10:** Gender issues in STEM.
  Reading: Jebsen, J.M., Nicoll Baines, K., Oliver, R.A. et al. ***Dismantling barriers faced by women in STEM***. Nat. Chem. 14, 1203–1206 (2022).

Week 7 – Converging technologies and regulation

- Tuesday, **October 14**: Converging technologies.
  Video: ***Leading scientists discuss converging technologies: George Whitesides***. (Harvard University) https://www.youtube.com/watch?v=KGdQzf4imsM

- Friday, **October 17**: Technology and regulations
  Reading: ***The FDA no longer requires all drugs to be tested on animals before human trials***. Science. https://www.science.org/content/article/fda-no-longer-needs-require-animal-tests-human-drug-trials
  Video: Perspective from politicians: ***FDA Modernization Act*** Press Conference. https://www.youtube.com/watch?v=PhagcDKMjzY

Week 8 – Sustainability issues of new technologies

- Tuesday, **October 21**: Lithium batteries, energy, and global supply chains
  Readings: ***The future of four wheels is all electric***, Goldman Sachs. https://www.goldmansachs.com/insights/articles/the-future-of-four-wheels-is-all-electric
  Video: ***The True Cost of Lithium Mining*** | *Insider News.* Available at https://www.youtube.com/watch?v=nl0E-UhKB5E&t=18s

- Friday, **October 24**: Health and Environmental impacts of innovations
  Readings: ***The Environmental Impacts of Cobalt Mining in Congo***. EARTH.ORG https://earth.org/cobalt-mining-in-congo/
  Video: ***The True Cost of Cobalt | People and Power*** – Al Jazeera English. https://www.youtube.com/watch?v=sZRRJkSNKug

Week 9 – Midterm and group seminar preparation session

- Tuesday, **October 28 MIDTERM**
- Friday, **October 31** Group seminar prep.: seminars guide, expectations, and Q&A

MODULE III SEMINARS: CONTEMPORARY ISSUES IN SCIENCE & TECHNOLOGY

Week 10 – Generative AI and Deepfakes | Case Study II

- Tuesday, **November 4**, **GenAI and Deepfakes**
  Reading: ***Generative AI and Deepfakes are Fueling Health Misinformation.*** Available at https://theconversation.com/generative-ai-and-deepfakes-are-fuelling-health-misinformation-heres-what-to-look-out-for-so-you-dont-get-scammed-246149

- Friday, **November 7**, **Case Study II**

Week 11 – Robot Scientists | Ozempic Epidemic

- Tuesday, **November 11**, **Robot Scientists**
  Reading: R. D. King, V. Schuler Costa, C. Mellingwood and L. N. Soldatova, ***Automating Sciences: Philosophical and Social Dimensions***, in *IEEE Technology and Society Magazine*, vol. 37, pp. 40-46, March 2018.

- Friday, **November 14**, **Ozempic Epidemic**
  Reading: Paul et. al. The Ozempic 'epidemic' and its dangerous consequences. https://mjlh.mcgill.ca/2024/03/12/the-ozempic-epidemic-and-its-dangerous-consequences/

Week 12 – Smart Cities | AI Energy Crisis

- Tuesday, **November 18**, **Smart Cities**
  Reading ***The truth about smart cities: "In the end, they will destroy democracy"***. *The Guardian*, Wed 17 Dec. 2014. Available at https://www.theguardian.com/cities/2014/dec/17/truth-smart-city-destroy-democracy-urban-thinkers-buzzphrase

- Friday, **November 21**, **AI Energy Crisis**
  Reading: ***Projecting the Electricity Demand Growth of Generative AI Large Language Models in the US.*** https://www.energypolicy.columbia.edu/projecting-the-electricity-demand-growth-of-generative-ai-large-language-models-in-the-us/

Week 13 – Thanksgiving Recess (No Classes)

Week 14 – Quantum Computing | Big Techs

- Tuesday, **December 2**, **Quantum Computing**
  Readings: Carolyn T. Holter, Philip Inglesant & Marina Jirotka (2023) ***Reading the road: challenges and opportunities on the path to responsible innovation in quantum computing***, Technology Analysis & Strategic Management, 35:7, 844-856.

- Friday, **December 5, Big Techs**
  Reading: Moss E, Metcalf J. ***The Ethical Dilemma at the heart of Big Tech Companies***. Harvard Business Review, Nov. 14, 2019. Available at: https://hbr.org/2019/11/the-ethical-dilemma-at-the-heart-of-big-tech-companies.

Week 14 – Wrap up session and FINAL EXAM

- Tuesday, **December 9**: Wrap up session: Seminars Highlights, Quick Review and Discussion.

- Friday, **December 12:** FINAL EXAM **– IN CLASSROOM.**