

# STS 201 – Understanding Technological Society: Intro STS

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

## Course Syllabus *Spring 2025*

**Instructor:** Dr. Renan Silva  
Department of Humanities and Social Sciences  
**Email:** [rg799@njit.edu](mailto:rg799@njit.edu)  
**Office Hours:** by appointment (email me in advance)

**Weekdays:** Tuesdays and Thursdays  
**Time:** 4:00 – 5:20PM  
**Room:** FMH 319  
**Course materials:** [canvas.njit.edu](https://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 entrepreneurship 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](mailto: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 (25%):** 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 (15%):** 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 Analysis I and II (20%):** an open essay question related to a selected short article (do be done in classroom) (I) and a 2-page analysis of a case chosen and circulated by the instructor (II). Analysis 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%):** 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 will be graded by their capacity to articulate theories and literature, quality of presentations, and discussions held in classroom.
- **Research Paper (20%):** A Research Paper is an academic paper written by a college student where they conduct research on a specific topic, analyze data, and present their findings in a structured format, **following guidelines set by their professor.**

A research paper is a key component of learning critical thinking, research skills, and effective writing within an undergraduate degree program. The paper presents how the literature accessed in the course and student's personal interests are useful to examine the societal aspects of a technology – its problems, challenges, and future.

**A problem associated with a technology in society should be selected by the student and discussed with the professor ahead of time** (ex.: a specific AI-based tool, a case involving Drones or new artifacts, a social media, a nuclear power plant project, an aircraft project, etc.). You can find many materials, videos, discussion, blog post, etc. to support your analysis. **Be creative** and pick a topic that you will enjoy to study and about what you'll like to collect new data and/or unexpected conclusions.

The paper is a max. 4,000 words (APA Style, references included, double-spaced, Times New Roman, Font size: 12; margins: 2), **in which the student exercises the capability of building associations between the literature and their selected case.** Research papers are expected to be delivered before the end of the group seminars!

\*\*\***Attention**\*\*\*: Work generated with ChatGPT are not allowed - software will be used to check ChatGPT-generated reports.

### **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 your 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: CONCEPTS AND TOOLS**

#### **Week 1 – Introduction to Science and Technology Studies**

- Tuesday, **January 21:** Welcome Session: Course Introduction and Syllabus.
- Thursday, **January 23:** What is Science and Technology Studies?  
 Readings: (A) Rohrer, 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 – Infrastructures, knowledge, and open-ended design**

- Tuesday, **January 28:** Infrastructures  
 Reading: Star, Susan L. (1999) *The Ethnography of Infrastructure*. American Behavioral Scientist, 43(3), 377-391. <https://doi.org/10.1177/00027649921955326>
- Thursday, **January 30:** 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, **February 4:** Scientific Revolution.  
Reading: Kuhn, T. (1962) *The Structure of Scientific Revolutions*. Introduction, and II (The route to Normal Science), 1-21.
- Thursday, **February 6:** 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, **February 11:** 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].
- Thursday, **February 13:** 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 Analysis and techno-solutionism

- Tuesday, **February 18:** Case Analysis I (*in classroom, see “Assignments.”*)
- Thursday, **February 20:** 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, **February 25:** 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>
- Thursday, **February 27:** Gender issues in STEM.  
Reading: Jebson, 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, **March 4:** Converging technologies.  
Video: *Leading Scientists Discuss Converging Technologies: George Whitesides*.  
(Harvard University) <https://www.youtube.com/watch?v=KGdQzf4imsM>

- Thursday, **March 6:** 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, **March 11:** 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>
- Thursday, **March 13:** 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>

### SPRING BREAK: 16 – 22 March 2025.

### Week 9 – Midterm and group seminar preparation session

- Tuesday, **March 25,** MIDTERM
- Thursday, **March 27,** Group seminar prep.: seminars guide, expectations, and Q&A

## MODULE III GROUP SEMINARS: TRENDS IN SCIENCE AND TECHNOLOGY

### Week 10 – Robot Scientists | Case Analysis II

- Tuesday, **April 1, 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.
- Thursday, April 3, **Case Analysis II** (*homework – remotely, see “Assignments.”*)  
**Due: Thursday, April 3 UNTIL 6PM.**

### Week 11 – April 8 and 10, Research Paper week | Due: April 11, FRIDAY, 11:59PM

### Week 12 – New Jersey Drones | Ozempic Epidemic

- Tuesday, **April 15, New Jersey Drones**  
 Reading: *Online Activity related to “New Jersey Drones”* Available at <https://www.montclair.edu/school-of-communication-and-media/wp->

<content/uploads/sites/20/2024/12/Montclair-New-Jersey-Drones-Social-Media-Study.pdf>

- Thursday, **April 17, 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 13 – Smart Cities | AI Energy Crisis**

- Tuesday, **April 22, 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>

- Thursday, April 24, **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 14 – Quantum Computing | Big Techs**

- Tuesday, **April 29, Quantum Computing**

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

- Thursday, **May 1, 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 15 – Wrap up session and Research Paper**

- Tuesday, **May 6**, wrap up session, seminars highlights and discussion.
- **RESEARCH PAPER Due: May 9, FRIDAY, 11:59PM.**