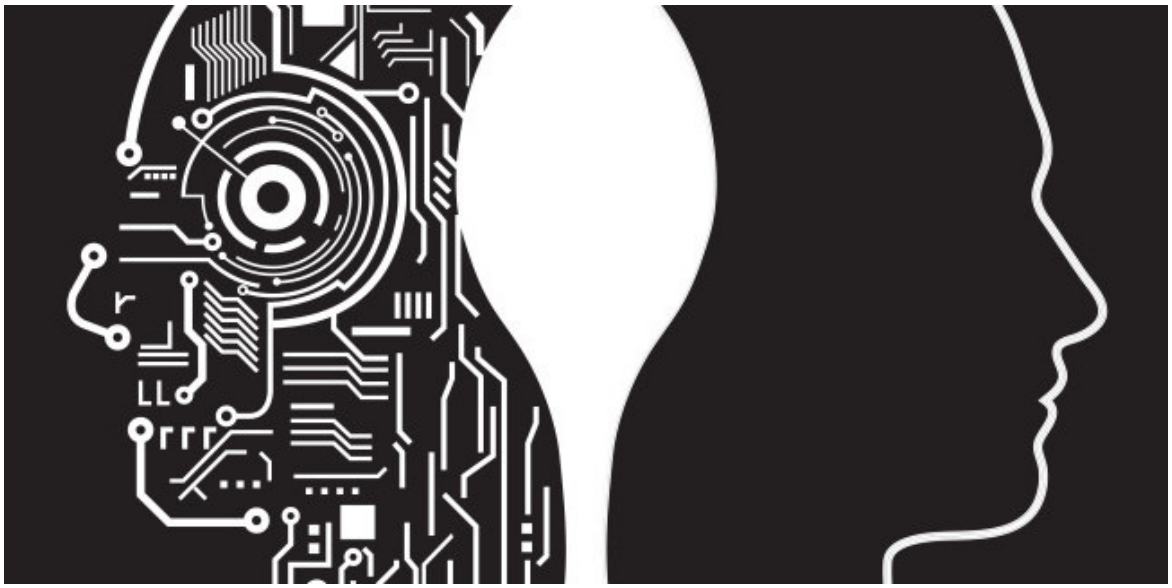
STS 302: Science, Technology, and Human Values



Distance Education | Asynchronous Instruction | Ragan Glover-Rijkse

INSTRUCTOR CONTACT

Course Instructor: Ragan Glover-Rijkse
Email: rlglove2@ncsu.edu
Office hours: By appointment (phone, video conference)

Note: The instructor will make every effort to respond to student emails within twenty-four hours during standard university business hours (Monday-Friday from 8:00 AM-5:00 PM). Any email received outside of standard university business hours will be responded to on the following university business day.

COURSE DESCRIPTION

> *"the central mission of STS teaching and scholarship to date has been the articulation of an interpretation of science and technology that depicts them as complex socially embedded enterprises in which cultural, political, and economic values, as well as technical expertise, shape the directions of scientific research and technological innovation" (Cutcliffe, 1990, p. 362)*

This course provides an interdisciplinary evaluation of recent and potential influences of current scientific and technological developments on US and non-US societies. Emerging social, ethical, and intellectual issues include: the adequacy of contemporary scientific frameworks; the relations among science, technology, and society; the social consequences of scientific and technological applications; and human prospects and possibilities. We examine recent and potential influences of historical and

current scientific and technological developments on society and vice versa. We will explore emerging social, ethical, and intellectual issues in the context of scientific and technological developments on a global as well as on a local basis and relate them to the social value systems. Special attention is given to the ideological context of evolving science and technology.

STUDENT LEARNING OUTCOMES

By the end of this course, a student receiving a C or better will be able to:

- Critically examine the relationship between technology and society
- Apply a range of theories from Science and Technology Studies (STS)
- Explore, synthesize, and evaluate the effect of various values, social issues, cultural aspects, politics and economics on particular scientific questions and technologies.
- Develop own perspective to describe and analyze the relationships between science, technology, and human values.

COURSE COMPONENTS AND GRADING

The following table shows how the final grade will be determined.

Participation	20%
Quizzes	10%
Exercises	15%
Short Papers	20%
Midterm Exam	15%
Final Exam	20%
Total for Final Grade	**100 points**

ASSIGNMENTS

Regarding Assignment Submission: If a student cannot, for any reason, post an assignment to Moodle, it is their responsibility to email the assignment to the instructor *before* the deadline! Students are responsible for ensuring that they submitted a correct and working file, before the deadline. If a student submits an incorrect or corrupt file, they are responsible for correcting the issue or emailing the instructor before the deadline.

***Technological difficulties are not an excuse for failing to submit an assignment on time. Students should back-up their work (e.g. to the cloud, to external hard drive) often to ensure that computer crashes, accidents, etc. do not affect their ability to submit work. They also should allow themselves sufficient time to upload all assignments.

Assignment Types

Participation (20%)

Students' participation grade will be based on the following components:

1. Completion of assigned readings, videos, and lectures by the end of each week (Sunday 11:59 PM)

2. Thoughtful and active participation in online forums and small group discussions

Quizzes (10%)
Short quizzes will be given, throughout the semester, to assess students' learning (with emphasis on lecture materials). Quizzes are low-stakes (i.e. worth only a small part of the student's grade), but failure to complete quizzes or repeated poor performance on quizzes will negatively impact the grade.

Exercises (15%)
Exercises will occur throughout the semester and are designed to help students apply what they are learning in the readings. Exercises are low-stakes (i.e. worth only a small part of the student's grade), but failure to complete exercises or repeated poor performance on exercises will negatively impact the grade.

Short Papers (20%)
Students will write short papers, throughout the semester which will require them to complete research, develop a perspective, and apply learning from the course. These papers should be written in APA format, using formal academic language, and include a reference page. Short papers are due in Weeks 2, 3, 6, 10, and 13.

Midterm (15%)
The mid-term exam is short-answer and multiple-choice, based on the content from the first half of the semester. The midterm exam occurs in Week 8 of the course. The purpose of the exam is for students to demonstrate that they have understood the major issues addressed in the course and that they can articulate an insightful, well-supported response to these issues.

Final Exam (20%)
The final exam is short-answer and multiple-choice, based on the content from the full the semester. The purpose of the exam is for students to demonstrate that they have understood the major issues addressed in the course and that they can articulate an insightful, well-supported response to these issues.

Course Schedule

Week 1: August 10-16
Topic: Course introductions. What is STS and how does it relate to human values? (What are human values? How do we determine values? What do we define values—i.e., personal, exogenic, norms, ideological commitments? How are human values reflected in the production of science and technology?)

Readings:

- Sismodo, S. (2010). The prehistory of Science and Technology Studies. In: *An Introduction to Science and Technology Studies*. Wiley-Blackwell, pp. 1-11.
- Edelman, J. (2018, Jan 2). Human values: A quick primer. *Medium*. Retrieved from: https://medium.com/what-to-build/human-values-a-quick-primer-b01ef9617925

Videos

- Metaethics: https://www.youtube.com/watch?v=FOoffXFpAlU&feature=youtu.be

Week 2: August 17-23

Topic: Social construction of scientific and technological knowledge (How do social actors shape our knowledge and technological practices? How can we examine scientific and technological change?)

Readings:

- Sismodo, S. (2010). "The Social Construction of Scientific and Technological Realities." In: *An Introduction to Science and Technology Studies*. Wiley-Blackwell, pp. 57-71.
- Watkins, E. S. (2011). The social construction of contraceptive technology: An investigation of the meanings of Norplant. *Science, Technology, and Human Values*, 36(1), pp. 33-54.

Week 3: August 24-30

Topic: Ethics in research (How do values become embedded into research design? How should we approach research design? What responsibility do designers hold toward recipients/users scientific and technological advancements? What responsibilities do designers hold to research participants?)

Readings:

- Verbeek, P. (2006). Materializing morality: Design ethics and technological mediation. *Science, Technology, and Human Values*, 31(3), pp. 361-380.
- Resnik, D. B. (2015). "What is ethics in research and why is it important?" *National Institute of Environmental Health Sciences*. *(make sure to read the full article, all the way to the bottom of the webpage)

Week 4: August 31- September 6

Topic: Participatory Research and Procedural Justice (What are participatory research and procedural justice? What values are embedded within these research/experimentation approaches? What are their merits and limitations?)

Videos:

- Nind Ph.D., M. (Academic). (2011). *What is participatory research?* [Streaming video]. Retrieved from SAGE Research Methods. (12 min)

Readings:

- Ottinger, G. (2012). Changing knowledge, local knowledge, and knowledge gaps: STS insights into procedural justice. *Science, Technology, and Human Values*, 38(2), pp. 250-270.
- Tironi, M. (2015). Disastrous publics: Counter-enactments in participatory experiments. *Science, Technology, and Human Values*, 40(4), pp. 564-587.

Week 5: September 7-13

Topic: Open and Citizen Science (How should science and technology professionals communicate with the public? Who should be involved in scientific and technological development? What are the merits of inviting public participation in scientific/academic research?)

Readings

- Chubin, D. (1985). Open and closed science: Tradeoffs in democracy. *Science, Technology, and Human Values*

Videos:

- NASA's "Citizen Scientists: Data for World" (6 min 48 sec)
- Jordan Mcrae "The crucial role of citizen science in ocean conservation" (12 min, 52 sec)

Week 6: September 14-20

Topic: Science, technology and public policy (How should public policy shape developments in science and technology? What is the importance of public disclosure? Why do disputes arise in the process of interpreting science to drive policy?)

Readings

- Kourany, J. & Pinto, M. (2018). A role for science in public policy? The obstacles, illustrated by the case of breast cancer screening policy. *Science, Technology, and Human Values*, 43(5), pp. 917-943.
- Kinchy, A. & Schaffer, G. (2018). Disclosure conflicts: Crude oil trains, fracking chemicals, and the politics of transparency. *Science, Technology, and Human Values*, 43(6), pp. 1011-1038.

Week 7: September 21-27

Topic: Actor Network Theory (What is ANT? How does ANT handle questions of agency? Why is ANT a significant framework for STS?)

*Reading*s:

- Sismodo. (2010). Actor Network Theory. In: In: *An Introduction to Science and Technology Studies*. Wiley-Blackwell, pp. 81-92.
- Slack, J. and Wise, M. (2014). Agency. In: *Culture and Technology: A Primer*, *2nd Edition*. Peter Lang, pp. 137-148.

Week 8: September 28 - October 4

Midterm

Week 9: October 5 - 11

Topic: Technological determinism (What is technological determinism and how does it relate to theories of social constructed nature of science and technology? How can we understand technological determinism today as a useful tool in STS?)

Readings:

- Winner, L. (1993). Upon opening the black box and finding it empty: Social constructivism and the philosophy of technology. *Science, Technology, and Human Values*, 18(3), pp. 362-378.
- Sismodo, S.. (2010). Two questions concerning technology. In: *An Introduction to Science and Technology Studies*. Wiley-Blackwell, pp. 93-105.

Week 10: October 12-18

Topic: Politics of technology (How are politics embedded into design choices? What is the technological construction of political power? How are technologies legitimated?)

Readings:

- Winner, L. (1980). Do artifacts have politics? *Daedalus*, 109(1), pp. 121-136.
- Fouché, R. (2006). The Wretched of the Gulf. *The Black Scholar*, pp. 7-12.
- Rosenberger, R. (2014). How cities use design to drive homeless people away. *The Atlantic*.
- *Optional foundational text for enthusiastic readers:* Pfaffenberger, B. (1992). Technological dramas. *Science, Technology, and Human Values*, 17(3), pp. 282-312.

Week 11: October 19-25

Topic: Datafied Society (How do we begin to conceptualize a "datafied society?" What is at stake? What is the relationship between human values and data collecting practice? Who controls big data and, thus, whose values are represented in these practices?)

Readings

- Kitchin, R. (2014). Big Data, new epistemologies and paradigm shifts. *Big Data & Society*.
- Andrejevic, M. (2014). The big data divide. *International Journal of Communication*, 8, pp. 1673-1689.

Week 12: October 26-November 1

Topic: Governing Algorithms (How do values become encoded into algorithms? Should/How do we govern algorithms? Can algorithms display bias? How do algorithms shape our world?)

Readings:

- Ziewitz, M. (2016). Governing Algorithms: Myth, Mess, and Methods. *Science, Technology, & Human Values*, *41*(1), 3–16.
- Bunz, M. (). The need for a dialogue with technology. In: M. T. Schäfer and K. van Es (Eds.), *The Datafied Society*: *Studying Culture through Data*. University of Amsterdam Press, pp. 249-254.

Videos:

- Slavin, Kevin (2011). How algorithms shape our world, TED Talk,

Week 13: November 2-8
Topic: Bioscience and biotechnologies (What are bioscience and biotechnologies? How do they challenge the notion of "human" itself and what challenges do they pose to human values?)

Readings

- *Benefits & Risks of Biotechnology*. (n.d.). Future of Life Institute. Retrieved July 14, 2020
- Marks, N. J., & Russell, A. W. (2015). Public engagement in biosciences and biotechnologies: Reflections on the role of sociology and STS. *Journal of Sociology*, *51*(1), 97–115.

Week 14: November 9-15
Topic: Study for final exams; complete grade discrepancy report, if needed; contact instructor with any concerns.

Week 15: November 16-20
Final Exams