

# Science, Technology & Society

Tuesdays 10.00–11.30, Thursdays 8.30–10.00, Dupuis Hall 217

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SOCY 363  
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## Course description

In this course, you will learn about selected aspects of the politics of science and technology. The course is organized in two parts. The first part is an introduction into the ways in which scholars have looked at science and technology not as something which is 'removed' or 'outside' of society, but as thoroughly social endeavors. As such, they are open to scrutiny through empirical investigation, and to social and political claims of accountability. Some of the questions we will ask in the first part are: Under which conditions does it make sense to understand scientific knowledge as 'socially constructed'? What are the mechanisms by which scientific facts acquire the status of powerful and authoritative truths? How have lay people challenged the authoritative knowledge and activities of experts, and what are the implications? The second part will then examine the politics of science and technology through a number of selected examples. The ways in which scientists make facts matters, and this is most obvious in the areas of sex/gender, race/ethnicity, and sexuality. Accordingly, some of the questions we will ask in this part are: How did genomics change the ways in which scientists think about race/ethnicity, and how do they deal with political claims for inclusion in their research? How do lay people appropriate genetic ancestry testing to stake political claims? How have social assumptions about gender shaped the ways in which scientists make biological facts? How have assumptions about gender and sexuality shaped medical technologies? We end the course with a discussion of race and gender in science textbooks, and critical questions about science education.

## Learning objectives

Through this course, you should gain:

- an *appreciation* of the socially constructed and contested nature of science and technology in society;
- *knowledge and understanding*: the ability to identify and describe key questions and concerns about (a) the ways in which social assumptions (i.e. about race, gender, and sexuality) shape scientific knowledge, and (b) the ways in which science and technology influence the politics of race, gender, and sexuality;
- *reading and writing skills* (this is a very reading intensive course).

## Organization

The first part of the course (weeks 1–5) will be taught through two lectures per week. The second part of the course (weeks 6–13) will be taught through one lecture and one tutorial per week. There will be three tutorial groups led by me and the TAs. I will post info on tutorial groups and meeting place & times on onQ once enrolment is closed.

## Expectations & assignments

In order to pass this course, you will need to complete the assignments listed below. I will give more detailed instructions on each written assignment in class before each relevant deadline.

- *Weekly reading reflections*. This is a reading intensive course, and accordingly your engagement with the course readings will constitute 30% of your grade. Each lecture I will set aside time for you to react to the readings in written form, based on a question I will give you. I expect you to demonstrate that you have read the text, that you have understood the basics of the author's argument, and that you can generate some questions about the argument's conceptual or practical implications. You may miss two reading reflections without penalty.
- *Tutorial participation*. Once we move into the second part of the course you will have the opportunity to collaboratively explore and discuss the readings with your class mates in tutorials. I expect you to engage in meaningful discussion in tutorials based on your thoughtful reading of the texts. Coming to tutorials prepared – bringing your notes and questions – will be crucial to do so successfully.
- *Two take-home assignments*. For each of these assignments I will give you material which you will analyze drawing on concepts and ideas from this course. I will evaluate how well you're able to apply what you learn through both the readings and the lectures to the material (so, because lectures and readings only partially overlap, make sure you take notes effectively). You will have ten days to complete each assignment. Both assignments have to be submitted electronically via onQ.

- A book review of one of the following books (900-1100 words excl. references, double-spaced):
  - Morning, Ann Juanita (2011). *The nature of race. How scientists think and teach about human difference.* Berkeley: University of California Press.
  - Nelson, Alondra (2016). *The social life of DNA. Race, reparations, and reconciliation after the genome.* Boston: Beacon Press.
  - Reardon, Jenny (2017). *The postgenomic condition. Ethics, justice, and knowledge after the genome.* Chicago: The University of Chicago Press.
  - Stein, Melissa N. (2015). *Measuring manhood. Race and the science of masculinity, 1830-1934.* Minneapolis: University of Minnesota Press.
  - TallBear, Kimberly (2013). *Native American DNA. Tribal belonging and the false promise of genetic science.* Minneapolis, MN: University of Minnesota Press.

These books explore one or more of the themes of this course, and by the end of this course you should be able to understand and assess the book you choose with the knowledge you learn here. The purpose of a book review is not (only) to summarize the content of the book, but to situate its merit and to critically evaluate the author's purpose, claims, methods, and evidence. I will evaluate how well you are able to comment on (a) how convincing the author presents their claims, as well as on (b) the book's import to our understandings of the politics of biomedical knowledge in society.

### Grading, submission & deadlines

All written assignments have to be submitted through onQ. I can only grant you extensions in exceptional cases and if you supply proof (i.e. a QSAS accommodation, doctor's note). Note that in all other cases I will take 5% off your grade per day. Grading and due dates are as follows:

Grade component	Due dates	Weight
Reading reflections	weeks 3–12	20%
Tutorial participation	weeks 6–12	10%
Take-home assignment 1	week 6	25%
Take-home assignment 2	week 9	25%
Book review	week 14	20%

For your final grade, your numerical course average then will be converted to a letter grade according to the Queen's Official Grade Conversion Scale.

Grade	Numerical Range
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

### **Readings and resources**

All readings will be available via onQ. Note that this material is copyrighted and is for the sole use of students registered in the course. This material shall not be distributed or disseminated to anyone other than students registered in the course. Failure to abide by these conditions is a breach of copyright, and may also constitute a breach of academic integrity under the University Senate's Academic Integrity Policy Statement.

### **Copyright of Course Materials**

Course materials created by the course instructor, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the intellectual property of the instructor. It is a departure from academic integrity to distribute, publicly post, sell or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution, posting, sale or other means of dissemination, without the instructor's express consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

## Academic Integrity

Queen's students, faculty, administrators and staff all have responsibilities for supporting and upholding the fundamental values of academic integrity. Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility (see [www.academicintegrity.org](http://www.academicintegrity.org)) and by the quality of courage. These values and qualities are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the [Senate Report on Principles and Priorities](#)).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see [Academic Regulation 1](#)), on the [Arts and Science website](#), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Be especially mindful of unintended plagiarism. Regardless of how and where you retrieve information, the principles of academic integrity apply. Please visit these helpful websites to help you make sure that you are able to write things in your own words:

- Resources from [Queen's University](#)
- Resources from [MIT](#)
- Resources from [The University of Wisconsin](#)

## Accommodation for disabilities

Queen's University is committed to achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Queen's Student Accessibility Services (QSAS) and register as early as possible. For more information, including important deadlines, please visit the QSAS website.

## **Academic considerations for students in extenuating circumstances**

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and are interfering with their ability to complete academic requirements related to a course for a short period of time. The Senate Policy on Academic Consideration for Students in Extenuating Circumstances is available [here](#).

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and the portal where a request can be submitted at: <http://www.queensu.ca/artsci/accommodations>. Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

If you need to request academic consideration for this course, you will be required to provide the name and email address of the instructor/coordinator. Please use the contact information given at the beginning of this syllabus.

# Course schedule & readings

Week	Topics
0.5	no class on Sept 5
*	<b>Part I: The politics of knowledge</b>
1	From context to content
2	Laboratory studies
3	Credibility
4	Power & authority
5	Lay knowledge, expert knowledge
*	<b>Part I: The politics of difference</b>
6	De-/reconstructing race & ethnicity
7	Mobilizing 'genetic ancestry'
8	Gendering & sexing the body
9	Sexuality
10	Sex, gender, sexuality: the case of 'hysteria'
11	Race & gender in science textbooks
12	Critical questions about science education

## **Week 1: From context to content**

- Sismondo, Sergio (2010). *An Introduction to Science and Technology Studies*. 2nd ed. Chichester: Wiley-Blackwell, Ch. 3 "Questioning Functionalism in the Sociology of Science."

### **Week 2: Laboratory studies**

- Knorr-Cetina, Karin (1981). *The manufacture of knowledge. An essay on the constructivist and contextual nature of science.* Oxford, New York: Pergamon Press, Ch. 1 "The scientist as a practical reasoner."

### **Week 3: Credibility**

- Shapin, Steven and Simon Schaffer (1985). *Leviathan and the Air-Pump. Hobbes, Boyle, and the Experimental Life.* Princeton, NJ: Princeton University Press, Ch. II "Seeing and believing."
- Haraway, Donna (1997). *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouse. Feminism and Technoscience.* New York: Routledge, Ch. 1.

### **Week 4: Power & authority**

- Gieryn, Thomas F. (1983). "Boundary-Work and the Demarcation of Science from Non-Science. Strains and Interests in Professional Ideologies of Scientists". In: *American Sociological Review* 48.6, pp. 781–795.
- Moore, Kelly (1996). "Organizing Integrity. American Science and the Creation of Public Interest Organizations, 1955-1975". In: *American Journal of Sociology* 101.6, pp. 1592–1627.

### **Week 5: Lay knowledge, expert knowledge**

- Wynne, Brian (1992). "Misunderstood misunderstanding. Social identities and public uptake of science". In: *Public Understanding of Science* 1.3, pp. 281–304.
- Epstein, Steven (1995). "The Construction of Lay Expertise. AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials". In: *Science, Technology, & Human Values* 20.4, pp. 408–437.

### **Week 6: De-/reconstructing race & ethnicity**

- Fujimura, Joan H. and Ramya Rajagopalan (2011). "Different Differences. The Use of 'Genetic Ancestry' versus Race in Biomedical Human Genetic Research". In: *Social Studies of Science* 41.1, pp. 5–30.
- Shim, Janet K., Sara L. Ackerman, Katherine Weatherford Darling, Robert A. Hiatt, and Sandra Soo-Jin Lee (2014). "Race and ancestry in the age of inclusion. Technique and meaning in post-genomic science". In: *Journal of Health and Social Behavior* 55.4, pp. 504–518.

### **Week 7: Mobilizing 'genetic ancestry'**

- Roberts, Dorothy (2012). *Fatal invention. How science, politics, and big business re-create race in the Twenty-First Century*. New York and London.: The New Press, Ch. 10 "Tracing racial roots."
- Pick *one* of the following:
  - Nelson, Alondra (2008). "Bio science. Genetic genealogy testing and the pursuit of African ancestry". In: *Social Studies of Science* 38.5, pp. 759–783.
  - Panofsky, Aaron and Joan Donovan (2017). *When Genetics Challenges a Racist's Identity. Genetic Ancestry Testing among White Nationalists*.
  - TallBear, K. (2013). "Genomic articulations of indigeneity". In: *Social Studies of Science* 43.4, pp. 509–533.

### **Week 8: Gendering & sexing the body**

- Fausto-Sterling, Anne (2000). *Sexing the body. Gender politics and the construction of sexuality*. New York, NY: Basic Books, Ch. 5 "Sexing the brain."
- Richardson, Sarah S. (2012). "Sexing the X. How the X Became the "Female Chromosome"". In: *Signs: Journal of Women in Culture and Society* 37.4, pp. 909–933.

### **Week 9: Sexuality**

- Carpenter, L. M. and M. J. Casper (2009). "A Tale of Two Technologies. HPV Vaccination, Male Circumcision, and Sexual Health". In: *Gender & Society* 23.6, pp. 790–816.
- Oudshoorn, Nelly (2003). *The male pill. A biography of a technology in the making*. Durham: Duke University Press, Ch. 8 "The first man on the pill."

### **Week 10: Sex, gender, sexuality: the case of 'hysteria'**

- Maines, Rachel P. (1999). *The technology of orgasm. "Hysteria," the vibrator, and women's sexual satisfaction*. Baltimore: Johns Hopkins University Press (excerpts).

### **Week 11: Race & gender in science textbooks**

- Martin, Emily (1991). "The egg and the sperm. How science has constructed a romance based on stereotypical male-female roles". In: *Signs* 16.3, pp. 485–501.
- Morning, Ann (2008). "Reconstructing Race in Science and Society: Biology Textbooks, 1952–2002". In: *American Journal of Sociology* 114.S1, S106–S137.

## **Week 12: Critical questions about science education**

- Anderson, W. (2008). "Teaching 'Race' at Medical School. Social Scientists on the Margin". In: *Social Studies of Science* 38.5, pp. 785–800.