Overview

This class uses the angle of controversy to introduce students to various academic and popular approaches to the social scientific and humanistic study of science and technology. The class draws on classic academic works in diverse fields, such as the history and philosophy of science, anthropology, and bio-ethics, while also integrating a broad base of engaging and accessible material (editorials, national policies on science, legal regulations, and scientific controversies to name just a number examples) that educate as well as evoke critique and transformation of the complex contemporary practices, methods, and politics of science and technology.

This year the course will be organized around two specific topics: microbes, past and present, and code and coders/hackers. Among many other themes, the course will examine: the nature of truth and paradigm shifts in science, managing epidemics through public health campaigns and software, the role of values and bias in the design of technological production and scientific discovery, fights for openness and transparency in science and technology, the politics of software algorithms and cybersecurity, surveillance, and leaking.

Class is organized around two weekly lectures and a weekly discussion-based conference session.

Readings

Most readings are available via links on this syllabus or on our course website.

David Greene, the librarian for Communication Studies, is available for support and research assistance. He can be reached at david.greene@mcgill.ca.

The following books are required and available for purchase at Paragraph Books (2220 Av McGill College):


Requirements, Methods of Examination, and Grading
1. Midterm exam + Essay 30% (multiple choice and one take-home essay)
2. Exam 20% (multiple choice)
3. Eight pop quizzes 25% (the lowest of the eight will be dropped)
4. Policy Brief 25% (separate instructions provided)

Attendance at lectures and conference sections is mandatory. If you have to miss the lecture, please arrange to get notes and any videos shown in class from a classmate. All cellphones, electronic devices, and wireless connections must be turned off for the duration of class. **After our first midterm, computers will be banned and you will have the option of writing an extra credit essay comparing class before and after the ban.**

To ensure students keep up with the readings, we will have eight pop quizzes during the course of the semester. They will be short, ten-minute exams covering basic concepts and facts from the reading. The lowest of the six will be dropped.

**Grading**

*Grade Breakdown*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade point</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.0</td>
<td>85 – 100</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
<td>80 – 84</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
<td>75 – 79</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td>70 – 74</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
<td>65 – 69</td>
</tr>
<tr>
<td>C+</td>
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<td>60 – 64</td>
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<tr>
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<td>2.0</td>
<td>55 – 59</td>
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<tr>
<td>D</td>
<td>1.0</td>
<td>50 – 54</td>
</tr>
<tr>
<td>F (Fail)</td>
<td>0</td>
<td>0 – 49</td>
</tr>
</tbody>
</table>

**Grade Appeals**

I am always happy to meet to discuss in further detail the criteria used for grading. Please come see me in office hours or make an appointment, if you would like to meet with me to clarify my standards and procedures. It is rare for me to change grades unless it was based on a calculation of error, which has happened on occasion. Academics place serious weight on the process of peer review, which is based on the ideas that qualified outsiders are the best judge of the quality and strength of work. If you would like to discuss or appeal your grade, please follow the process detailed below.

1. I will correct calculation errors, at any time with apologies.
2. Please set up an appointment or come to my office hours to seek explanation for a grade. The most likely course of action will be to discuss improvement for subsequent assignments.

3. If a student wishes to dispute a grade, you may choose to follow the university's standard appeals process (note: if an appeal is heard at the university level, it is considered *sui generis*, meaning that the grade could stay the same, be raised or lowered and will be graded by another professor in the University).

**Email Policy**

During the academic year, I receive a considerable amount of email. In order for me to respond to my email efficiently, please follow the following guidelines:

1. If you cannot see me during my office hours, email me to set up an appointment; I will try to respond as soon as possible but I usually cannot accommodate a meeting in 24 or even 48 hours.

2. I read and reply to email once a day and usually do not read or reply to email after 5 PM or weekends.

3. Grade inquiries and disputes will not be considered or discussed via email. For all grade inquiries and questions about assignments, please set up an appointment with me (see above).

4. I will not reply to email inquiries regarding course matters (assignment requirements, due dates, exam structure, readings, etc.) that arise from missing class or inattention to the course syllabus. Inquiries requesting clarification will receive replies, though I would strongly prefer these inquiries to be made in class or during office hours.

**Other Information and McGill Policies**

*Language:* In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

*Accommodations:* Students requiring special testing accommodations or other classroom modifications should notify Prof. Coleman and the Office for Students with Disabilities as soon as possible. The OSD is located in Suite 3100, Brown Student Services Building, ph: 398-6009 (voice), 398-8198 (TDD), [www.mcgill.ca/osd/](http://www.mcgill.ca/osd/).

*Academic Integrity:* McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism, and other academic offenses under the Code of Student Conduct and Disciplinary Procedures. (for more information, see [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/)).

L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/)).
**Academic resources:** Students looking for additional assistance with academic reading, study, research and writing skills should consult the McGill academic resources website at: [www.mcgill.ca/students/academicresources/](http://www.mcgill.ca/students/academicresources/).

**Counseling:** McGill's Counseling Service provides extensive personal, academic, and career counseling to undergraduate and graduate students, including workshops on study skills, multiple-choice exams, text anxiety/stress management. They are located in Brown Student Services Bldg. 398-3601 [www.mcgill.ca/counselling/](http://www.mcgill.ca/counselling/). A list of groups and workshops can be found at: [www.mcgill.ca/counselling/groups/](http://www.mcgill.ca/counselling/groups/).

**Illness:** Students are responsible for material covered in all classes, including anything missed due to illness. Examinations will not be rescheduled and assignment due date extensions will not be provided, for any reason other than documented illness. Students unable to attend examinations or complete assignments due to illness are expected to contact me prior to the examination or due date by email and by phone. Appropriate documentation will be required to support requests for special consideration due to illness (see [http://www.mcgill.ca/students/advising/faq#a14](http://www.mcgill.ca/students/advising/faq#a14)).

**Schedule**

The following is a “working schedule.” **Class materials are subject to change based on the interests, understanding, and general pace of the class.** It is your responsibility to keep on top of any schedule changes, whether you are in class or not. If you have a concern about any of the materials, please speak to me or the teaching assistants.

### Week 1

#### September 6: Introductions


Lorretta Jackson Heyes, “We don’t need more STEM majors. We need more STEM majors with liberal arts training.” Washington Post, 2015. [https://www.washingtonpost.com/posteverything/wp/2015/02/18/we-dont-need-more-stem-majors-we-need-more-stem-majors-with-liberal-arts-training/](https://www.washingtonpost.com/posteverything/wp/2015/02/18/we-dont-need-more-stem-majors-we-need-more-stem-majors-with-liberal-arts-training/)


#### September 8: The Disorder and Ignorance of Science

Stuart Firestein, “Ignorance: How It Drives Science.” 2015. (Introduction, Chapter 1, 2)


* **No Conference Sections**
Week 2

September 13: Ignorance continued
Stuart Firestein, “How Ignorance Drives Science.” 2015 (Chapters TBD)
  https://library.ias.edu/files/UsefulnessHarpers.pdf

September 15: The Limits of Enlightenment Rationality and the Question of Truth
  http://oregonstate.edu/instruct/phl201/modules/Philosophers/Nietzsche/Truth_and_Lie_in_a_n_Extra-Moral_Sense.htm

Conference Sections: Rationality and the Desire for Perfection, Gone Amok
Watch “The Sterilization of Leilani Muir” (Glynis Whiting, 1996) and “My 93 year old Flatmate” (SBS Report, 2016) before our conference sections.

Week 3

September 20: The Politics of Language and Truth/Reality
Susan Sontag, “Illness as Metaphor.” 1978. (excerpts)

September 22: Values in Science and Technology

Conference Sections: Class Discussion
Debate and discuss this week's readings, especially Colapinto and Douglass. Yael Grauer. “Dark Patterns are designed to trick you (and they're all over the Web).” Ars Technica, 2016.

**Microbes, Past and Present**

**Week 4**

**September 27: Establishing Truth (is Not So Easy)**
   http://sciencedevil.wordpress.com/2012/12/21/hero-of-science-barry-j-marshall/

**September 29: In-Class Film**
“Resistance” (Michael Graziano, 2015) screening in class.

**Conference Sections: Antibiotic Resistance**

**Week 5**

**October 4: A New Paradigm Emerges**
Thomas Kuhn, “The Structure of Scientific Revolutions.” 1962. (Excerpts)
   (Chapter 2)

**October 6: A New Paradigm Emerges in Some Places**
Alex Nading, “Evidentiary Symbiosis: On Paraethnography in Human—Microbe Relations.”
Science as Culture. 2016.

**Conference Sections: Rethinking the Brain/Gut/Microbe Connection**

**Week 6**

**October 11: Pandemics, Microbes and Secrecy**

**CODE AND CODERS/HACKERS**

**October 13: Hackers**

**Conference Sections: Responding to Pandemics—the Case for Open Source Software**

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**Week 7**

**October 18: What is Intellectual Property Law?**

**October 20: In-class Exam**
Multiple-choice exam // take-home essay due at the end of class.

**Conference Sections**
No conference sections. Use the time to study or to relax after the exam but you are required to watch “The Internet's Own Boy” (Brian Knappenberger, 2014). We will be discussing some of this material the following week. https://archive.org/details/TheInternetsOwnBoyTheStoryOfAaronSwartz

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**Week 8**

**October 25: What Is Code? What is Free Software**

**October 27: Freeing Software, Open Science**


**Skype Lecture Guest:** Titus Brown, Associate Professor of Population Health and Reproduction, UC Davis, open source software hacker, and open science proponent. He will be discussing the use of software in scientific discovery and how to credit programmers who write software that is increasingly indispensable for invention/discovery.

**Conference Sections: How Free Should Science and Technology Be?**


[http://bigthink.com/neurobonkers/a-pirate-bay-for-science](http://bigthink.com/neurobonkers/a-pirate-bay-for-science)

Discussion of the Internet’s Own Boy.

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### Week 9

**November 1: Algorithms and Accountability in Software**


**November 3: McGill Neurological Institute and Opening Science**

Class visit TBD


**Conference Sections: When Openness is Not Enough**


Margaret Heffernan, “Dare to Disagree.” TED Global 2012.  
Week 10

November 8: Running an Open Source Business
Class lecturer: Thomas Erikson, CEO of open source firm Acquia https://www.acquia.com/

November 10: No class
* No Conference Sections

Week 11

November 15: Gender, Diversity, and Computing
https://hbr.org/2007/03/why-i-wrote-the-no-asshole-rule

November 17: Exam Number 2
In-class exam.

Conference Sections: Gender and Computer Science
http://www.npr.org/sections/health-shots/2014/10/24/357584372/video-what-women-get-flak-for-when-they-talk

Week 12

November 22: Security and Code
Guest Lecturer: Oliver Bilodeau, security researcher, hacker, and co-founder of Montréhack
http://montrehack.ca

November 24: Surveillance and Privacy

Conference Sections: Is There Too Much Surveillance? Is CyberWar a Real Threat?

Week 13

November 29: Anonymity in the Age of the Internet

December 1: Whistle blowing, the Politics of Leaking, and Hackers/Journalism

Conference Sections: Debating The DNC Leak