The Department of Sociology and Anthropology
Faculty of Arts and Social Sciences

SA 315-4: New Information Technology and Society, (SA-4)
Spring 2020

Instructor
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Office Hours:
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Thurs: *9:30-10:30*
(or by appointment)

Spring Semester
2020

[**Prerequisites:** SA 150, SA 101, or SA201W, or by permission]

Course Description:

This course will explore the nature of present-day 'information technology' (IT) and its implications for contemporary society. The course will survey a wide range of rapidly developing computer-based technologies, beginning with an analysis of the 'rise of the network society.'

We will then trace its many components and their interrelations, namely, the 'digital economy' and its impact and meaning for work and workers, 'digital democracy' and its implications for the political status quo and resistance, 'big data' and its significance for social control, the 'internet of things' and the meaning of a completely connected and 'programmable' world, the transformative nature of 'blockchains' and 'decentralized autonomous organizations,' the meaning and potential of 'artificial intelligence' and 'technological singularity,' as well as the rise of 'robotics,' 'nanotechnology,' genetic manipulation, and 'virtual' institutions and activities.

Central to this survey of IT, we will examine the impact on social life and attendant political and ethical issues. Among other questions, we will ask who controls the use and development of IT and to what ends? Can it be seen as benign or neutral? Are there inherent biases and negative implications? What do the present trends augur for the future?

Objectives:

The course is intended to provide the student with:

a) a broad grasp of the scope of IT,
b) a critical analysis of who develops, owns and uses this technology,
c) an understanding of the implications for social life,
d) an examination of the underlying biases in IT,
e) an appreciation of the power and potential of the current real and possible uses, as well as its theoretically potential uses in a society not divided by class.

Grading:
Your final mark in the class will be based on **three pieces of work**:

(a) weekly study notes (10%) [Due **each week** for 10 weeks]
(b) a critical book review (40%) [Due: **13 February 2020**]
(c) a term essay (50%) [Due: **8 April 2020**]

Both the book review (10-15 pages) and the term essay (15-20 pages) must be written-up in **formal essay style**, complete with footnotes (any format, consistently used); and both must be typed and double-spaced, and submitted in hard copy.

The weekly study notes must be typed and submitted electronically as point-form notes and comments on two or more articles, books, or book chapters – one to two pages each - on topics for any **ten** weekly topics on the course (10%). **The publications reviewed must be from academic not journalistic sources**.

Please keep your own electronic file of all the course assignment submissions.

***Nota Bene**: Unless otherwise specified on the course outline, all graded assignments in this course must be completed for a final grade to be assigned other than N.*

It is expected that students will attend and participate in the seminars.

Required Reading:

There is no single text because no text covers the breadth of the course, and given the speed of technological change, no text can now remain current for more than a few months. It is also in the nature of book publishing that the day it is published its content material is about 2 years old.

Fortunately, there is a very large body of literature on the topics covered in the course, and students should make the best possible use of literature research technology at their disposal (see SFU Library). Technological developments are now so rapid and change so pervasive that this course outline can only provide a set of suggested readings (articles and/or books, chapters) that captures some of the key principles of the present technological era available online or in the library.

It is expected that students will read **2 or more articles, books or book chapters** for each section. It is also expected that the reflections on these readings will be brought to the class and form the basis for student participation.

Required Texts: None – suggested readings are listed on the syllabus, and they are just that, suggested; students are encouraged to read the most up-to-date material in the library and online.

Academic Dishonesty and Misconduct Policy

All students are expected to read SFU's policies concerning ***academic dishonesty***
[T 10.02 and T 10.03]. *Find policies here*: http://www.sfu.ca/policies/gazette/student.html

SA 315 NEW INFORMATION TECHNOLOGY AND SOCIETY

COURSE SYLLABUS:

General Background: Science/technology and society

There is a large body of literature addressing the general question of technology and society. Students can consult many books in the library and/or articles online. Here are a few suggestions:

- Alcorn, P.A. (1986) *Social Issues in Technology,* Prentice-Hall.
- Chant, C. (ed.) (1990) *Science, Technology and Everyday Life*, The Open University.
- Goyder, J. (1997) *Technology and Society: A Canadian Perspective*, Broadview Press.
- Hard, M. & A. Jamison (2005) *Hubris and Hybrids: A Cultural History of Science and Technology*, Routledge.
- Kroker, A. & M. Kroker (eds) (2013) *Critical Digital Studies: A Reader*, University of Toronto Press.
- Kyrre, J. et al (eds.) (2013) *A companion to the philosophy of technology.*
- McGinn, R. E. (1991) *Science, Technology and Society*, Prentice-Hall.
- Schwab, K., *The Fourth Industrial Revolution*, Penguin 2006/7
- Westrum, R. (1991) *Technologies and Society: the shaping of people and things.*

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Week 1: **Introduction:**

- **Review of course syllabus**

- What is knowledge, information, data?
- What is science, technology? Their relation?
- What is technological innovation? Are there technological revolutions?
- Technology and social change/social revolution
- Technology as ideology
- Periodization of historical eras, and the question of 'progress'?

Suggested Readings:

- Connor, C. D. (2005) *A People's History of Science*, New York: Nation Books.
- Feenberg, A. (1991) *Critical Theory of Technology*, Oxford: OUP
- Habermas, J. (1970) 'Technology and Science as Ideology,' in Habermas, *Toward a Rational Society*, Beacon Press
- Hessen, B. (1931/1970) 'The Social and Economic Roots of Newton's "Principia",' in *Science at the Cross Roads,*
- Kuhn, Thomas (1970) *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.

- Livingstone, D. & P. Sawchuk (2004) *Hidden Knowledge: Organized Labour in the Information Age*, Aurora: Garamond, 2004
- Merton, R. K. (1970) *Science, Technology and Society in Seventeenth-Century England*, New York: Harper.
- Klaus Schwab, *The Fourth Industrial Revolution*, WEF/ Penguin, 2006/7.

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Week 2: The Machine and the Computer

What is a machine? What is a computer? What do machines do? What do computers do?

- History of technology and the place of computers
- History of computers,
- Coming of the chip -- size, memory, applications
- Relation between technology and human nature and class structure.

Suggested Readings:

Augarten, S. (1984) *Bit by Bit: An Illustrated History of Computers*
O.Regan, G. (2016) *Introduction to the history of computing: a computing history primer*
Rid, T. (2016) *Rise of the machines: a cybernetic history*
Rojas, R. (2001) *Encyclopedia of computers and computer history*
Winters, P. & P. (2006) *The history of computers*

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Week 3: What is Information technology, information society?

- Rise of network society
    - Digitization
    - Globalization

Suggested Readings:

- Andrejevic, M. (2013). *Infoglut: How too much information is changing the way we think and know*. London: Routledge.
- Castells, Manuel (2010) "The Information Technology Revolution" in *The Rise of the Network Society*.
- Cortada, J. (1996*) Information technology as business history: issues in the history and management of computers*
- Feather, J. (2008) *The information society*
- Fuchs, C. & M. Sandoval (eds) (2014) *Critique, social media and the information society*
- Hassan, R. (2008) *The information society*
- Kovarik, B. (2016) *Revolutions in communication: media history from Gutenberg to the digital age*

- Lindgren, S. (2017). *Digital Media and Society: Theories, topics, and tools*, Sage.
- *OECD guide to measuring the information society (2011)* Paris
- Webster, F. (2014) *Theories of the information society*

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Week 4: *Digital Economy* and impact on work and workers

a) Robotics and 'cybernetics'

See: 'Humans need not apply'

Humans Need Not Apply - YouTube
https://www.youtube.com/watch?v=7Pq-S557XQU

Suggested Readings:

- Brynjolfsson, E. & Adam Saunders, *Wired for Innovation: How Information Technology Is Reshaping the Economy*
- Brynjolfsson, E. & McAfee, *Race Against the Machine*, Lexington, Mass. 2011,
- Dyer-Witheford, N. (2015) *Cyber-proletariat: global labour in the digital vortex*
- Fuchs, Christian. "Class and Exploitation on the Internet". In T. Scholz (ed) (2013) *Digital Labor: The Internet as Playground and Factory*, edited by 211 – 224. New York: Routledge.
- Hardt, Michael and Antonio Negri (2000) "Postmodernization, or the Informatization of Production." In *Empire*, 280 – 303. Cambridge, Mass: Harvard University Press.
- Jarrett, K. (2016). *Feminism, Labour, and Digital Media: The Digital Housewife*, London: Routledge.
- Levy, F. & Murnane, R.J., *The New Division of Labor: How computers are changing the next job market*, Princeton, Princeton University Press 2004
- Martin, F. (2015) *Rise of the robots: technology and the threat of a jobless future*, New York: Basic Books
- Rifkin, J., *The End of Work*, New York: Putnam's Sons, 1995
- Robots and the Economy, April 9, 2014 http://reasonandmeaning.com/2014/04/09/summary-of-marshall-brains-robotic-nation/
- Schiller, H. I. (1986) *Information and the Crisis Economy*, OUP
- Tapscott, D. *Grown Up digital*, McGraw-Hill, 2009
- Tapscott, D. & A. D. Williams (2010) *Macrowikinomics: Rebooting Business and the World*, Portfolio Hardcover.
- Tapscott, D. (2014) *The Digital Economy Anniversary Edition: Rethinking Promise and Peril In the Age of Networked Intelligence*, McGraw-Hill.
- Huws, Ursula (2003) "The Making of a Cybertariat: Virtual Work in a Real World".
- Wierzbicki, A. (2016) *The future of work in information society*

Oxford Study:

- **Oxford Professors: Robots And Computers Could Take Half Our Jobs Within The Next 20 Years** http://theeconomiccollapseblog.com/archives/oxford-professors-nearly-half-our-jobs-could-be-automated-within-the-next-20-years

- THE FUTURE OF EMPLOYMENT: HOW SUSCEPTIBLE ARE JOBS ... www.oxfordmartin.ox.ac.uk/downloads/academic/**The_Future_of_Employment**.

b) Precarious Labour

Suggested Reading

- Standng, Guy, *The Precariat*; and *The Precariat Charter*

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Week 5: Digital Democracy and impact: who rules and how?

- political structure, nation state, and citizens
- Privacy, military, healthcare, education

Suggested Readings:

- Barend Lutz and Pierre du Toit, *Defining Democracy in a Digital Age Political Support on Social Media* (e-book)
- Boler, Megan, Digital media and democracy : tactics in hard times [P 95.8 D54 2008]
- Dahlberg, L. & Siapera, E. (eds.) (2007) Radical Democracy and the internet: interrogating theory and practice
- Feenberg, A. & D. Barney ((2004) *Community in the digital age*
- Fenton, Natalie, New media, old news : journalism & democracy in the digital age [PN 4784 T34 N49 2010]
- Fuchs, C. (2018). *Digital Demagogue: Authoritarian Capitalism in the age of Trump and Twitter*. London: Pluto.
- Goujon, P. (2007) *The information society: innovation, legitimacy, ethics and democracy*
- Gutstein, D. (1999) *E.con: How the Internet Undermines Democracy*, Toronto: Stoddart.
- Hacker, Kenneth L; Dijk, Jan van, Digital democracy : issues of theory and practice [JC 423 D627 2000]
- Hanna, N. (2010) *Transforming government and building the information society*
- McChesney, R., *Digital Disconnect: How Capitalism Is Turning the Internet Against Democracy* (e-book)
- O'Neil, C. (2016) *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, New York: Allen Lane
- Schuler D & P. Day (eds) (2004) *Shaping the Network Society*, Cambridge, Mass: MIT Press
- Wasko, J. & V. Mosco (eds) (1992) *Democratic Communications in the Information Age,* Toronto: Garamond
- Zuboff, S. (1988). In *The Age of the Smart Machine: the future of work and power*. New York: Basic Books.
- Zuboff, S. (2019). *The Age of Surveillance Capitalism*, New York: Hachette.

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Week 6: Internet of Things

The 'programmable world' -- a world of 'smart' things

Suggested Readings:

- Abbate, J. (1999) *Inventing the Internet*, MIT Press
- Bessis, N. &C. Dobre (eds) (2014) *Big Data and the internet of things*
- Burkitt, F. (2015) *A strategists guide to the internet of things*
- Dhanjani, N. (2015) *Abusing the internet of things: blackouts, freakouts and stakeouts.*
- Feenberg, A. & N. Friesen (eds) (2012) *(Re) Inventing the Internet*
- Greengard, S. (2015) *The internet of things*
- Loukides, M. (2015) *What is the internet of things?*
- Miller, M. (2015) *The internet of things: how smart TVs, smart cars, smart homes, and smart cities are changing the world*
- Stackowiak, R. (2015) *Big Data and the internet of things: enterprise information architecture in a new age*

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Week 7: 'Block Chains' and 'decentralized autonomous organizations'

Goldman-Sachs: '…the blockchain… will disrupt everything…'

Suggested Readings:

- Tapscott, D. & A. Tapscott, (2016) *The Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World,* Penguin Books
- All you need to know about blockchain, explained simply | *World Economic Forum* https://www.weforum.org/agenda/2016/06/blockchain-explained-simply/
- The next Internet Revolution | Juan Benet | TEDxSanFrancisco - https://www.youtube.com/watch?v=2RCwZDRwk48
- Blockchain is Eating Wall Street | Alex Tapscott | TEDxSanFrancisco https://www.youtube.com/watch?v=WnEYakUxsHU
- Blockchain Demystified | Daniel Gasteiger | TEDxLausanne https://www.youtube.com/watch?v=40ikEV6xGg4
- The Bitcoin and Blockchain Technology Explained https://www.youtube.com/watch?v=oSP-taqLWPQ

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Week 8: Big Data – 'weapons of math destruction' – algorithms and decisions
Social Media

Suggested Readings:

- A short definition of Big Data: < http://lexicon.ft.com/Term?term=big-data >
- 'A Very Short History Of Big Data' (May 9, 2013) http://www.forbes.com/sites
- Bessis, N. &C. Dobre (eds) (2014) *Big Data and the internet of things*
- Big data: are we making a big mistake? https://www.ft.com/content/21a6e7d8-b479-11e3-a09a-00144feabdc0
- IBM on Big Data: http://www.ibm.com/big-data/us/en/
- O'Neil, C. (2016) *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, New York: Allen Lane

- US White House promotes Big Data: https://www.whitehouse.gov/sites/default/files/microsites/ostp/big_data_press_release_final_2.pdf

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Week 9: Artificial Intelligence and 'technological singularity'

- *Knowledge outside of humans that can self-generate*
- Machine learning (ML) and deep learning (DL)
- Cognitive psychology

Suggested Readings:

- Flasinski, M. (2016) *Introduction to artificial intelligence*
- Kaplan, J. (2016) *Artificial Intelligence: what everyone needs to know*
- Kurzweil, Ray (2005) "The Six Epochs" in *Singularity is Near: When Humans Transcend Biology*.
- Muller, V. (ed.) (2016) *Fundamental issues of artificial intelligence*
- Science: Special Issue on artificial intelligence (AI): Science: 07/17/2015, Vol 349 Issue 6245

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Week 10: Nanotechnology

'OMG It's Small!'

Suggested Readings:

- Amaldi, S. (ed.) (2014) *Responsibility in Nanotechnology Development*
- Bhushan, B. (ed.) (2016) *Encyclopedia of Nanotechnology*
- Dhasmana, A. et al, (2016) *Nanotechnology*
- Kulkarni, S. (2014) *Nanotechnology: principles and practice*

- Lourioz, J-M. et al (eds.) (2016) *Nanosciences and nanotechnology: evolution or revolution?*

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Week 11: Biotechnology: Genetic manipulation

Into the Unknown…

Suggested Readings:

- Bovenkerk, B. (2012) *The biotechnology debate: democracy in the face of intractable disagreement.*
- Rifkin, Jeremy (1999) "The Biotech Century" and "Reinventing Nature" in *The Biotech Century*.
- Salar, R.K. et al (eds.) (2013) *Biotechnology: principles and applications*
- Singh, H. et al (eds.) (2016) *Intellectual property issues in biotechnology*
- Singh, K. K. (2014) *Biotechnology and intellectual property rights: legal and social implications*
- Zhong, J-J. (ed.) (2013) *Future trends in biotechnology*

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Week 12: Virtual institutions, organizations, cultural activities

"Reality" without physicality

Suggested Readings:

- D'Antoni, S. (ed.) (2006) *The virtual university: models and message, lessons from case studies*
- Davidson, C. & D. Goldberg (2010) *The future of thinking: learning institutions in a digital age*
- Dyer-Witheford, N. (2009) *Games of Empire: global capitalism and video games*
- Hinrichs, R. &C. Wankel (eds.) (2011) *Transforming virtual world learning*
- Kline, S. (2005) *Digital Play: the interaction of technology, culture and marketing*
- Rifkin, J. (2000) *The Age of Access, …life as a paid-for experience*, Putnam
- Rosecrance, R. (1996). 'The Rise of the Virtual State.' *Foreign Affairs*, Vol. 75. No. 4. (45-61)
- Schatt, D. (ed.) (2014) *Virtual Banking: a guide to innovation and partnering*
- Schiller, H. I. (1989) *Cultural Inc. : The corporate takeover of public expression*
- Terranova, T. (2004) *Network Culture: Politics for the Information Age*, Pluto.
- Verheul, I. et al (eds.) (2010) *Digital Library Futures: User Perspectives and institutional strategies*

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Week 13: Who controls? Who, what is controlled?

- Corporations, governments, military, NGOs = class issue
- Privacy issues; freedom of speech

Suggested Readings:

- Bilker, B, T. Hughes, and T. Pinch (eds.) (2012) *The social construction of technological systems: new directions in the sociology and history of technology*, MIT Press
- Branscomb, A. (1994) *Who Owns Information?* Basic Books
- Dyer-Witheford, N. (1999) *Cyber-Marx: cycles and circuits of struggle in high-technology capitalism*
- Feenberg, A. & A. Hannay (eds.) (1995) *Technology and the Politics of Knowledge*, Indiana University Press.
- Feenberg, A (1999) *Questioning Technology*
- Feenberg, A (2002) *Transforming Technology: a critical theory revisited*
- Martinez, A. G. (2016) *Chaos Monkeys: Inside the Silicon Valley Money Machine*, London: Penguin.
- Morozov, E. (2014). *To Save Everything, Click Here*, Public Affairs
- Perelman, M. (1998) *Class Warfare in the Information Age*, New York: St. Martin's Press.
- Ranneberg, K. et al (2009) *The future of identity in the information society*
- Warburton S. & Hatzipanagos S. (eds.) (2013) *Digital identity and social media*
- Zuboff, S. (2019). *The Age of Surveillance Capitalism*. New York: Hachette.
- Zuboff, S. (1988). *In the Age of the Smart Machine: the future of work and power*. New York: Basic Books

http://unctad.org/en/PublicationsLibrary/presspb2016d6_en.pdf

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Journals:

- http://robotics.sciencemag.org/
- International Journal of Internet Science
- Wired

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