

SC/STS 3561: History of Computing and Information Technology

Fall 2017

(Cross listed as AP/SOSC 3561)

York University
Department of Science and Technology Studies
Faculty of Science

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Office hours: Before class on Wednesdays, by appointment

Lecture time: Wednesday, 4:00pm-7:00pm in Founders College 108

COURSE OVERVIEW

One can say, without hyperbole, that computers and information technology are the defining technologies of our age. These technologies are ubiquitous, nearly absolutely so – there are virtually no parts of our lives that are not touched, defined, mediated, or influenced by computers. It would be impossible to write *any* history of the late 20th and early 21st century without trying to make sense of the role of computers. Vice versa, the history of computers is essentially the history of human society in the late 20th and early 21st century.

Given this scope, this course presents *a* history of computing and information technology. The indefinite article is crucial as the range of topics, themes, concepts, and case studies that could fall under this history are nearly unlimited. Rather than trying to offer a comprehensive overview of the history of computers and information technology, this course instead considers this history as a means to contemplate larger conceptual questions. What roles do computers and information technologies have in shaping our lives? According to what values, ideals, and assumptions do we construct our digitized world? What does this history of computers and information technology tell us about technology in general? How can we better understand the social, political, epistemological, and ethical challenges and opportunities presented by technology by looking specifically at the history of computers?

Theoretically and methodologically, this course is grounded in outlooks emerging from Science and Technology Studies. By examining specific case studies in the history of computers and information technology, we will attend to key STS concerns such as the social construction of technology, the concrete historical contexts of technological development, the function of large-scale socio-technical systems or networks, and the relationship between technology and knowledge.

GRADE BREAKDOWN

Reading Reflections or Argumentative Essay (<i>See below for due dates and details</i>)	40%
Midterm Test (<i>October 25</i>)	30%
Take-home Exam (<i>Due November 29</i>)	30%
Participation	Up to 5% bonus

COURSE REQUIREMENTS

Attendance and Participation: There is no attendance mark for this class, but it is a given that students are expected to attend class regularly. In class, students are encouraged to participate in class discussions. Classes will consist of both lecturing and class conversations, the latter of which will be based on discussion questions provided for the readings each week. Students will also periodically engage in in-class group activities. A set mark is not given for participation, but up to a 5% bonus mark can be given at the instructor's discretion to students who participate regularly in class discussions, either in class or on Moodle's discussion boards.

Reading Reflections or Argumentative Essay: For the written component of this course, students can either opt to write four short reflections on the course readings (400-500 words each), or one longer argumentative essay (1800-2000 words).

The primary purpose of each option is to critically engage with the material of the course: What did you agree with? Disagree with? Find interesting? What spoke to you? What helped you make sense of some real-life issue or example?

If you opt for the reading reflection option, you should engage closely with the chosen reading, and focus tightly on a particular conceptual problem or argument.

The argumentative essay option is available to those students who want to elaborate on an idea or concept at greater length. Many of the themes and topics in this course will cover several weeks' readings, so there is a lot of opportunity to draw connections and make a broader argument. Do not think of this essay as several reading reflections combined; it should be a cohesive piece of writing integrating examples and ideas from several (at the very least, four) readings. **This option is due on November 29.**

In either case, ensuring you have a grasp on the arguments, theories, and examples of the readings is important, but don't just summarize. Offer your ideas and *construct an argument*.

In the case of the reading reflections, students can choose *any four* readings on which to base their reflections (including the supplementary, "further readings") with the following exceptions: You may only write one reflection on a chapter from Ceruzzi (not including the "Introduction" or "Conclusion" chapter – you cannot write a reflection on these). The due dates are listed below in the course schedule. Keep in mind that the reading you choose does not need to correspond to week you hand it in. You can choose a reading from earlier or later in the

course.

If you are citing readings from the course, use a proper citation format (in text (e.g. MLA or Chicago) or footnotes (e.g. Chicago)) but no bibliography is needed since the readings are on the syllabus. Any external sources you reference must be cited properly with endnotes or a bibliography.

Midterm Exam: Students will be assessed on their understanding of the concepts, themes, and readings from the first half of the course in a short midterm exam. The exam will consist of combination of short and medium written answer questions **(to be held in class on October 25)**.

Take-home Exam: The details of the take-home will be discussed in class. ***Take-home exam due December 5 (to be submitted online).***

CLASS SCHEDULE AND READINGS

The reading load for this course is light. Rather than bogging down students with a huge quantity of reading that will be read mostly superficially, students are given a manageable reading load. This means, however, that a high expectation will be placed on students to fully complete the readings and engage with them in focused manner.

There is one short required text for the course: Ceruzzi, Paul. *Computing: A Concise History*. MIT Press: Cambridge, Mass, 2012. It is available in the Campus Bookstore. This book will serve to provide a grounding and general overview of key historical events, developments, and concepts. This book will be supplemented by articles offering a more focused view on weekly topics and themes. These will be available either online or through Moodle.

Students should come to class with prepared notes and comments (partly in response to weekly reading/discussion questions provided ahead of each class) and expect to engage in class discussion.

Class	Date	Topic and Readings
1	September 13, 2017	<i>Course Introduction: Approaches, Issues, Aims, and Opportunities</i> Theoretical and Conceptual Background (students unfamiliar with STS theories and approaches should review the following, especially Pinch and Bijker): Bloor, David. 1991. "The Strong Programme in the Sociology of Knowledge." In <i>Knowledge and Social Imagery</i> , 3–23. Chicago: University of Chicago Press. Collins, Harry M. 1981. "Introduction: Stages in the Empirical Programme of Relativism." <i>Social Studies of Science</i> , 3–10.

		Latour, Bruno. 1993. <i>We Have Never Been Modern</i>. Translated by Catharine Porter. Cambridge, MA: Harvard University Press. Latour, Bruno. 1987. <i>Science in Action: How to Follow Scientists and Engineers Through Society</i>. Harvard University Press. Pinch, Trevor J., and Wiebe E. Bijker. 1984. "The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." <i>Social Studies of Science</i>, 399–441.
2	September 20, 2017	<i>Origins: Computers and War, Part I:</i> Bush, Vannevar. "As We May Think." <i>The Atlantic</i>, July 1945. https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/ Ceruzzi, Paul E. "Introduction" and "The Digital Age," in <i>Computing: A Concise History</i>. Further reading: Bromley, A. G. "Charles Babbage's Analytical Engine, 1838." <i>Annals of the History of Computing</i> 4, no. 3 (July 1982): 196–217.
3	September 27, 2017	<i>Origins: Computers and War, Part II:</i> Ceruzzi, Paul E. "The First Computers, 1935-1945" Wiener, Norbert. "Introduction." <i>Cybernetics or Control and Communication in the Animal and the Machine</i>, 2. ed., 14. Print. Cambridge, Mass: MIT Press, 2007. Further reading: Galison, Peter. "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision." <i>Critical Inquiry</i>, 1994, 228–266. Reading Reflection #1 Due
4	October 4, 2017	<i>Technological Determinism: How do Computers Shape Society?</i> Ceruzzi, Paul E. "Moore's Law and Technological Determinism: Reflections on the History of Technology." <i>Technology and Culture</i> 46, no. 3 (September 1, 2005): 584–93.
5	October 11, 2017	<i>Social Constructionism: How does Society Shape Computer Technology?</i> Barnes, Susan B. "Bridging the Differences between Social Theory and Technological Invention in Human-Computer Interface Design." <i>New Media & Society</i> 2, no. 3 (September 1, 2000): 353–72.
6	October 18, 2017	<i>Path Dependence in Computers and Information Technology</i> Diamond, Jared. "The Curse of QWERTY." <i>Discover</i>, April 1997. Oudshoorn, Nelly, Els Rommes, and Marcelle Stienstra. "Configuring

		the User as Everybody: Gender and Design Cultures in Information and Communication Technologies.” <i>Science, Technology, & Human Values</i> 29, no. 1 (2004): 30–63. Reading Reflection #2 Due
7	October 25, 2017	<i>Convergence and Divergence</i> Ceruzzi, Paul E. “The Stored Program Principle,” in <i>Computing: A Concise History</i>. Midterm Test
8	November 1, 2017	<i>Interpretative Flexibility and Computers: Are Computers “Universal Machines”?</i> Ensmenger, Nathan. “The Digital Construction of Technology: Rethinking the History of Computers in Society.” <i>Technology and Culture</i> 53, no. 4 (November 20, 2012): 753–76.
9	November 8, 2017	<i>Ethics of Computers and Information Technology</i> Sullins, John, “Information Technology and Moral Values”, <i>The Stanford Encyclopedia of Philosophy</i> (Spring 2016 Edition), Edward N. Zalta (ed.). https://plato.stanford.edu/archives/spr2016/entries/it-moral-values/
10	November 15, 2017	<i>Computers and Capitalism</i> Ceruzzi, Paul E. “The Chip and Silicon Valley,” and “The Microprocessor,” in <i>Computing: A Concise History</i>. Leavitt, Harold J., and Thomas L. Whisler. “Management in the 1980’s.” <i>Harvard Business Review</i>, November 1, 1958. https://hbr.org/1958/11/management-in-the-1980s Film: <i>Silicon Cowboys</i> (2016) Reading Reflection #3 Due
11	November 22, 2017	<i>Cyborg Visions: Have Computers Changed Humanity?</i> Vanderburg, Willem H. “The Autonomy of Technique as a Social and Historical Description: Our Failure to Exercise Our Responsibilities by Digitizing Life and Surrendering It to Computers,” <i>Bulletin of Science, Technology & Society</i> 32, no. 4 (August 1, 2012): 331–37
12	November 29, 2017	<i>Digitized Futures: Techno-Utopia or Techno-Apocalypse?</i> Ceruzzi, Paul. “Conclusion,” in <i>Computing: A Concise History</i>. Dennett, Daniel C. “Information, Technology, and the Virtues of Ignorance.” <i>Daedalus</i> 115, no. 3 (1986): 135–53.

		Further reading: Gruber, Sibylle. "The Good, the Bad, the Complex: Computers and Composition in Transition." <i>Computers and Composition</i>, 20th Anniversary Special Issue Part II, 21, no. 1 (March 1, 2004): 15–28. Reading Reflection #4 Due OR Argumentative Essay Due
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Academic Achievement: The purpose of this course is not to test you, but to give you an opportunity to read, learn, and think critically about interesting and important events, ideas, and theories. But evaluation is an inevitable part of the university process and so students often seek explicit guidelines for how to achieve specific marks. Below is a breakdown of the course expectations required to earn (and means of achieving) different grades.

A+ (90-100)	Course work demonstrates an exceptional understanding of the readings, lectures, and related concepts, theories, methods, and debates. Students can apply analytical concepts to new cases, identify theoretical issues, and offer original insights and critiques to existing literature. In essence, the student can participate fluently in discussion, analysis, and critique of the course material. To achieve this level of understanding, students will have to attend all lectures, complete all readings (including many of the supplementary readings), take detailed reading and lecture notes, participate in classroom discussions, and come prepared with questions based on the readings and prior lectures. Assignments are also expected to be submitted on time.
A (80-89)	Students demonstrate a very good understanding of overall course concepts, being able to explain and define them clearly and accurately. Students should also be able to make sense of the specific arguments, theories, and findings in the reading materials, draw insightful connections between the readings, and draw upon their specifics in elucidating and applying course concepts. Students may still have some difficulties in placing specific readings or lectures in the context of broader theories and empirical research (e.g. in relation to broader STS research). Coursework, while very good, will not exhibit the same level of rigour and originality as a first-rate grade (e.g. this work might make over-extended conclusions, engage with too little of the course material to support arguments, convey some minor misunderstandings of the readings or other course material, etc.).
B-B+ (70-79)	Students demonstrate a fair to good understanding of the overall course concepts, being able to define them clearly and accurately, but not fully able to elucidate them in detail, especially in the context of broader theoretical debates and historiography. Application of course concepts is somewhat rote rather than insightful and original. Course work demonstrates an ability to summarize the key points of the readings and lectures, but understanding of the specific arguments is

	thin. Students may not be fully able to draw creative connections between multiple readings or place them in clear conversation with each other. Practically speaking, students likely do not do all of the readings carefully or prepare sufficiently for class.
C-C+ (60-69)	Students demonstrate a basic understanding of the overall course concepts, being able to rehearse rudimentary definitions from lectures and readings, but cannot elucidate them in detail. Application of concepts is thin, and the student may have trouble drawing connections between different concepts and readings. Course work demonstrates a simplified understanding of the readings by which the main points of the readings can be summarized, but where the nuance and details of specific arguments are not addressed. Students may make mistakes in their definitions or confuse concepts. Practically speaking, students likely do not do the readings carefully, and some not at all. Lectures may be poorly attended. Students likely draw on lecture slides as their primary source of material. Course work is likely rushed.
D-D+ (50-59)	Students demonstrate a poor understanding of overall course concepts, being able to memorise some basic definitions and rehearse them for test purposes. Readings are poorly understood. Many mistakes are made in attempting to explain course material. Course work offers very basic definitions and summaries and little attempt at analysis or critical engagement. Practically speaking, students likely attend only a few lectures, and rarely do readings. Tests are prepared for haphazardly, using only lecture slides for review. Course work is rushed and often handed in late.
E (40-49)	Students demonstrate an insufficient understanding of course concepts, being able to perhaps rehearse some basic definitions to achieve a few marks on tests. Course work conveys no real genuine attempt to meet the requirements of assignments or engage sincerely with the material; it is essentially unacceptable. Students may perform adequately on one or two assignments, but fail to study for tests or submit remaining course work. Practically speaking, class is probably never attended and readings never done. The student has not made a serious effort in the course, but may have been tactically able to secure a few more marks than an F.
F (0-39)	A serious and sincere effort has not been made in the course. Coursework is unacceptable.

COURSE POLICIES

Classroom Etiquette: Students who attend class are expected to participate in the course. This means listening to lectures, taking notes, asking questions, and engaging in class discussions. If you are not going to engage in a serious way (this means going on your phone, talking, playing games on your computer, etc.), please do not come to class. If you come to class you are expected to remain for the entire class. Do not get up and leave in the middle of class; it is disruptive to the instructor and your classmates, and it is also rude.

Late Assignments: Hand your assignments in on time. Late assignments will be assigned a 5% per day penalty and will not be accepted after one week. Extensions will be granted only in the case of legitimate emergencies, or on medical or compassionate grounds. An attending physician's statement (not a doctor's note) is required for any medical reason for missing an assignment deadline. If you foresee an insurmountable reason why you cannot hand an assignment in on time, contact the course director with as much advance notice as possible. Do not wait until the last minute, as it is *extremely unlikely* this will result in an extension.

Plagiarism and Academic Dishonesty: Plagiarism and cheating is a serious offence. Plagiarism on an assignment or cheating on a test will result in a 0%. Serious cases or repeated offences will result in the failure of the course. Students are expected to fully review York's academic integrity tutorial: <https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity>. Before submitting an assignment, students should also refer to and complete the Academic Integrity Checklist: https://spark.library.yorku.ca/wp-content/themes/glendonits-spark-20151125/resources/Academic_Integrity_Checklist.pdf. *Do not submit any assignment until you have reviewed these guidelines. If you submit an assignment, I will assume you are well-versed in the standards of academic integrity expected of you, that you have reviewed and completed the Academic Integrity Checklist, and that you full understand the consequences for academic dishonesty. If you breach these expectations, you will not be given the benefit of the doubt or an opportunity to redo assignments.*

For all other general course and university policies, please refer to the following:

<http://calendars.registrar.yorku.ca/2016-2017/policies/index.htm>