

## SS082 The City and Technology

4:20 – 6:10 pm, Wednesdays | Room 201, Lecture Hall 3

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### Instructor

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### Course rationale

The history of modernity, particularly since the Industrial Revolution, is characterized by simultaneous and interconnected urban and technological growth. With the growth of industrial cities, advancements in various fields of technology flourished. Whether motivated by challenges arising in these new human settlements or not, these advancements undeniably played a significant role in facilitating the growth and transformation of modern cities, giving rise to new socio-spatial patterns and dynamics. Today, cities rely heavily on a wide range of technologies. From small household electronics to extensive water supply networks, these technologies, visible or invisible, form the essential infrastructure that underpins urban life.

In contemporary times, as cities continue to grow, they inevitably encounter various challenges, ranging from social and economic to ecological. Meanwhile, new technologies are also emerging (think of big models like Deepseek, humanoids, and many other new technologies), either specifically designed to address these challenges or emerging independently. These new technologies have the potential to profoundly reshape our lives in the city; however, the exact nature of their “reshaping” remains uncertain. Throughout history, technological innovations have often produced unforeseen consequences (can you think of an example?). To better anticipate the future, it is essential to develop a solid understanding of the intricate relationship between technology and urban change in both the past and present.

The course is designed to explore these issues, drawing on insights from various fields in the social sciences, including Science and Technology Studies (STS), urban studies, human geography, media studies, etc. The learning objectives of the course are mainly two-fold. Firstly, to comprehend the interconnected and co-evolving nature of urbanism/urbanization and technology, enabling students to gain a deeper understanding of the evolution of human society and cities over the past few centuries. Secondly, building on a critical understanding of past experiences, to better evaluate the current state of affairs and anticipate the future. In particular, the course aims to help students grasp the key challenges that contemporary cities are facing, explore emerging technological solutions, and critically analyze the potential impacts these technologies may have, good or bad.

### Learning objectives

Specifically, this course aims to:

- broaden students’ knowledge and understanding of urbanization history,

- cultivate an appreciation of the interweaving relationship between technology and shifting urbanization patterns and processes,
- help students develop cutting-edge knowledge of how technology may shape future cities,
- provide students with a set of research tools to perform independent and collaborative research in social sciences.

After studying this course, students should be able to:

- Familiarize themselves with the history of modern cities, including how technologies were developed to address specific urban challenges and how cities were transformed by these technologies, even if not always in the intended ways,
- Gain insights into some of the most current technological experiments around the world and understand how these innovations may potentially alter people's lives and the urban landscape in the future,
- Enhance their skills in presenting and writing in English.

## Learning materials

The course does not require a traditional textbook. That said, I do recommend the following learning materials for you to explore on your own.

### *Recommended books*

- Bijker, Wiebe E., Thomas P. Hughes, & Trevor Pinch, eds. (1989). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge, MA, and London: The MIT Press.
- Castells, Manuel. (2009 [1996]). *The Rise of the Network Society (The Information Age: Economy, Society and Culture Vol. I), Second edition*. Wiley-Blackwell.
- Cowan, Ruth Schwartz, & Matthew H. Hersch (2018). *A Social History of American Technology*. Oxford: Oxford University Press.
- Crowley, David J., & Paul Heyer (2018). *Communication in History: Technology, Culture, Society*.
- Dobraszczyk, Paul (2019). *Future Cities: Architecture and Imagination*. London: Reaktion Books.
- Giedion, Siegfried (1970 [1948]). *Mechanization Takes Command*. New York: Oxford University Press.
- Green, Ben (2019). *The Smart Enough City: Putting Technology in Its Place to Reclaim our Urban Future*. Cambridge, MA, and London: The MIT Press.
- Sismondo, Sergio (2009). *An Introduction to Science and Technology Studies (Second Edition)*. Malden, MA: Wiley-Blackwell.
- Schivelbusch, Wolfgang (1983). Trans. Angela Davies (1988). *Disenchanted Night: The Industrialization of Light in the Nineteenth Century*. Berkeley: University of California Press.
- Schivelbusch, Wolfgang., (2014 [1986]) *The Railway Journey: The Industrialization of Time and Space in the Nineteenth Century*. Berkeley, CA: University of California Press.

### *Recommended articles*

- Konvitz, Josef W., Rose, Mark H., & Tarr, Joel A. (1990). Technology and the City. *Technology and Culture*, 31 (2): 284-294.
- Coutard, O., & Guy, S. (2007). STS and the City: Politics and Practices of Hope. *Science, Technology, & Human Values*, 32(6): 713-734.
- Rowland, N. J., & Passoth, J.-H. (2015). Infrastructure and the state in science and technology studies. *Social Studies of Science*, 45(1): 137-145.
- Foley, R., & Miller, T. (2020). Urban Techno-Politics: An Introduction. *Science as Culture*, 29 (3): 309-318.

- Miller, T. R. (2020). Imaginaries of Sustainability: The Techno-Politics of Smart Cities. *Science as Culture*, 29 (3): 365-387.
- Wiig, A., Karvonen, A., McFarlane, C., & Rutherford, J. (2022). *Splintering Urbanism* at 20: Mapping Trajectories of Research on Urban Infrastructures. *Journal of Urban Technology*, 29 (1): 1-11.

## Assessment

Students will be evaluated based on their class involvement, class performance, and their ability to conduct independent research on specific topics. The breakdown of credit is as follows.

<b>Attendance</b>		<b>13%</b>
<b>In-Class Exercises (ICEs)</b>		<b>31%</b>
<b>Individual Project (IP)</b>		<b>56%</b>
Stage 1	Topic statement – 1	4%
	Presentation – 1	20%
	Feedback – 1	4%
Stage 2	Topic statement – 2	4%
	Presentation – 2	20%
	Feedback – 2	4%

### Attendance

To ensure effective learning, regular attendance is expected and required. If you are unable to attend a class, please notify me by email prior to the class. Starting from the 4<sup>th</sup> week, attendance will be taken regularly. Throughout the semester you are permitted to miss **up to three** classes. **If you exceed this limit, you will fail the course.** When absent from a class, make sure to secure class notes from a classmate.

### In-Class Exercises (ICE)

There will be a total of **12** in-class exercises (each worth **1-3%** of the final grade) conducted over the course of the semester. These exercises may occur **at any time** during class. The ICE is **NOT a quiz** but rather a semi-open-book activity designed to facilitate active engagement with course materials and test your learning. Tasks may include concept explanations, brainstorming exercises, debate responses, event reactions, and more.

Directions for semi-open-book ICEs: To avoid plagiarism and facilitate learning, we will have the ICEs in a semi-open-book form, which goes as follows. After you receive the ICE question sheet, you have **10-20** minutes to refer to lecture slides or your notes or surf the Internet to search for useful information and conceive an answer. You can even discuss with the instructor or classmates for clarifications. However, you **CANNOT** write anything during the process. After that, you will write down your answer without the help of any electronic devices (laptops, tablets, cellphones, etc.).

ICE makeup policy: Students enrolled later can make up missed ICEs given before their enrollment. Students who miss a class cannot make up the ICE given during the specific class.

### Individual Project (IP) – Urban life and technologies: Past, present, and future

Throughout the semester, you will work individually on a project examining technologies associated with one facet of urban life – such as food, housing, clothing, transportation, shopping, work, entertainment, communication, education, healthcare, or safety. The goal of the project is to explore the intertwined relationship between technology and urban life in various contexts.

Note that the project lasts through the semester and is divided into two stages. For **Stage 1**, you will conduct a “historical analysis,” reflecting on the development of a technology you choose to study in

the past, specifically from industrial revolution to the 1990s, and examine how it has impacted urban life in specific geographical contexts. For **Stage 2**, you will experiment with your imagination, speculating how technology will develop to address issues that may arise in the future, say from 2045 to 2055 (for this task, you are asked to think like a sci-fi writer). Bear in mind that the topic you choose for your “past” and “future” research should be topically and logically consistent.

Each stage of the project is further divided into three tasks: a topic statement, a presentation, and feedback on fellow students’ work. To help you advance your work, I will schedule individual meetings with each of you after you submit the two outlines. At the meetings, we will discuss how to improve your research plan and address any potential issues or challenges. The specific formats, tasks, and deadlines for each task of the two stages, as well as the arrangements of the two meetings, are outlined in the table below.

Tasks	Format	Key tasks	Deadline
<b>Stage 1 (Time frame: Industrial Revolution – 1990s)</b>			
Topic statement – 1	A written essay (~ 300 words)	<ul style="list-style-type: none"> <li>- Topic (What?)</li> <li>- Rationale (Why?)</li> <li>- Plan (How?)</li> </ul>	Apr. 2 (Midnight) Followed by a meeting in Week 7
Presentation – 1	A poster presentation (4-5 minutes)	<ul style="list-style-type: none"> <li>- Context</li> <li>- Development trajectory</li> <li>- Impacts</li> </ul>	Apr. 23, 30
Feedback – 1	A feedback sheet	/	Apr. 23, 30
<b>Stage 2 (Time frame: 2045 – 2055)</b>			
Topic statement – 2	A written essay (~ 300 words)	<ul style="list-style-type: none"> <li>- Topic (What?)</li> <li>- Rationale (Why?)</li> <li>- Plan (How?)</li> </ul>	May 14 (Midnight) Followed by a meeting in Week 13
Presentation – 2	Slides presentation (4-5 minutes)	<ul style="list-style-type: none"> <li>- Problems</li> <li>- Solutions</li> <li>- Impacts</li> </ul>	May 28, Jun. 4
Feedback – 2	A feedback sheet	/	May 28, Jun. 4

A more detailed guide for the assignment will be provided later.

## Class involvement and participation

Active class involvement and participation are highly valued in this course. It is through communication – with a community – that ideas are formed, revised, and developed, and individual learning flourishes. You are expected to actively participate by demonstrating active listening, taking thorough notes, asking questions, and facilitating discussions. This will create an environment conducive to open and shared learning experiences.

## Communication

Timely and effective communication plays a crucial role in education. Communication helps students achieve their learning goals and expand their learning opportunities. It also helps the instructor better understand the needs and concerns of students. Therefore, if you need help with course materials, assignments, research sources, data collection, presentation tools, or any other matters, please feel free to contact me via email. You are also encouraged to take advantage of my office hours for in-person discussions.

Throughout the semester, email and the QQ group will be the primary media of communication for document transmission and announcements. This allows for easier tracking of information and maintenance of records. If you have legitimate reasons for missing a class or wish to schedule an appointment, please communicate with me via email. For other “informal” discussions, such as everyday chitchat, event sharing, or casual conversations, we utilize the class QQ group.

## Course space on Blackboard

Course materials, including the course syllabus, lecture slides, and assignment guides, will be available on Blackboard starting from the first week. Another important function of Blackboard is the grade center. I will update your grades on Blackboard from the second week. You can check your grades regularly on Blackboard to monitor your own performance in the course.

## Academic integrity

Academic integrity is of utmost importance in academic learning and research. Therefore, the following behaviors are strictly prohibited in this course.

- Cheating on quizzes,
- Plagiarism, including failure to properly cite ideas and sources,
- Assisting others in cheating,
- Fabricating results or sources,
- Purchasing work from others
- Unauthorized or excessive use of AI tools

Please be aware that any instances of plagiarism or cheating can result in failure in the entire course or possible dismissal from the University.

## About AI tools

Generative Artificial Intelligence is quickly becoming a common tool in our everyday life. Tools like ChatGPT or Deepseek are increasingly used by people to expedite tasks for various purposes. The course does not prohibit the use of such tools since they may help you become more effective, self-directed learners. However, one should note that these AI tools can generate inaccurate or very biased information and cite faked sources. Moreover, original and critical thinking is crucial in the social sciences, yet a heavy reliance on AI can hinder the cultivation of such capabilities. So, while you can use AI tools to assist with your work, they can never replace your own original work. For these reasons, AI tools can be used only under certain circumstances specified as follows.

- AI tools can be used for
  - Prewriting and drafting phase: Researching topics, brainstorming ideas, crafting outlines, and searching for useful resources
  - Revising phase: Helping with grammar and spelling checks
  - Imaginative visual and videographic works
- AI tools cannot be used for
  - Answering ICE questions
  - Plagiarizing content from other sources
  - Generating the final content for assignments
- Prudent use of AI tools: As mentioned earlier, AI tools can make mistakes or biased observations and may not produce high-quality work that can earn you a decent grade. If you use them, make sure to revise the content they generated for better clarity, conciseness, coherence, and topic relevance.
- Citing AI tools: If you use AI tools, you must properly acknowledge and document its use, provide formal citations of any content (including text, image, audio, and video) AI tools generate, and explicitly state how they are used. For guidance on making such citations, you can refer to <https://dal.ca.libguides.com/CitationStyleGuide/citing-ai>. Any unauthorized or excessive use of AI will be considered a breach of academic integrity.

## Course structure

	Lecture	Assignments
Week 1 (Feb. 19)	Introduction	• <i>ICE (1 pt)</i>
Week 2 (Feb. 26)	Histories	Basic utilities: Water, Sewer, Power • <i>ICE (3 pts)</i>
Week 3 (Mar. 5)		Transportation (1): Modern roads & cars • <i>ICE (3 pts)</i>
Week 4 (Mar. 12)		Transportation (2): Railroads & the metro • <i>ICE (3 pts)</i>
Week 5 (Mar. 19)		Modern buildings and modern home • <i>ICE (3 pts)</i>
Week 6 (Mar. 26)		Communication (1): Telephones & the TV • <i>ICE (3 pts)</i>
Week 7 (Apr. 2)		Communication (2): The Internet, social media, & mobile technologies • <i>ICE (3 pts)</i> • <i>IP-Topic statement -1 &amp; Meeting</i>
Week 8 (Apr. 9)	Theories	Science and Technology Studies (1) • <i>ICE (3 pts)</i>
Week 9 (Apr. 16)		Science and Technology Studies (2) • <i>ICE (3 pts)</i>
Week 10 (Apr. 23)	• <i>IP-Presentation-1</i> • <i>IP-Feedback-1</i>	
Week 11 (Apr. 30)		
Week 12 (May 7)	Futures	Future cities (1) • <i>ICE (2 pts)</i> • <i>Field trip</i>
Week 13 (May 14)		Future cities (2) • <i>ICE (2 pts)</i> • <i>IP- Topic statement -2 &amp; Meeting</i>
Week 14 (May 21)		Future cities (3) • <i>ICE (2 pts)</i>
Week 15 (May 28)	• <i>IP-Presentation-2</i> • <i>IP-Feedback-2</i>	
Week 16 (Jun. 4)		