SOSC 1150: Science, Technology and Work

Fall 2020
Class Meeting Times: Tuesday and Thursday, 10:30 am – 11:50 am │ Room TBA
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Description:

Everyone who is familiar with the growth of the knowledge-based economy knows that science and technology powerfully influence the direction of work, the workplace, and, more broadly, capitalism. Science and technology have, however, been key factors in shaping work since at least the beginning of factory production. Similarly, workers' experiences and skills have shaped the development of specific scientific practices and technologies, resulting in a kind of 'co-production' between work and the knowledge artifacts that are used for and produced by work.

This course explores some of these interactions between science, technology, and work, surveying a range of topics and readings from the social sciences, including the sociology, anthropology, and history of the workplace.

Teaching Objectives:

The primary objective of the course is to develop your knowledge and understanding of factors that are relevant to the general topic of 'Science and Technology in the Workplace', giving you a solid foundation in the knowledge base comprising this broad area. I also hope to influence your academic and personal development so that, by the end of my course, you will have strengthened your enthusiasm for learning, experiencing a felt need for and pleasure taken in acquiring knowledge, skills, and attitudes that you can apply in your lives beyond the classroom. To achieve this broader objective, I will work in cooperation with you—by creating a partnership—because an educational partnership at its best helps you learn new skills that you can use in other educational settings or in whatever you choose to do after you graduate.

Course Goals and Intended Learning Outcomes:

This course provides you with fundamental knowledge about the interaction of science and technology in the workplace, enabling you to better understand the reciprocal relationship by virtue of which science and technology affect the workplace and the workplace affects science and technology.

Broadly speaking, there are four **intended learning outcomes** for this course. By the end of this course, you should be able to:

Learning Outcomes	*Teaching Activities*	*Assessment*
1 **Describe** characteristics of scientific and technological phenomena as they have played out in the workplace through history and in contemporary society. 2 **Explain** how and why scientific and technological change occurs and has influenced the workplace and the relationship between people and machines. 3 **Compare** and **contrast** how science and technology have affected industrial workplaces and societies as compared with services-oriented workplaces and societies.	I use in-class mini quizzes to test the extent to which you grasp the topics as we progress through the course and based on this I will adjust my teaching agenda as necessary.	Your grasp of the knowledge you gain from this course will be assessed through short-answer exam questions. I will emphasize questions pertaining to factual (and conceptual) knowledge early in the course; such questions will be featured heavily on the mid-term exam.
4 Based on an **awareness** of the ways in which science and technology can influence and shape people's work in the workplace, **apply** this understanding effectively in a variety of contexts and activities. Applying knowledge to more complex situations and problems will help you develop your ability to think critically about important issues that matter to you, and effectively put that knowledge to work for your own ends, not only after you have completed this class but also after you have graduated from HKUST.	There are two key activities to help you learn how to apply your knowledge and develop your critical thinking ability: First, I present topics in 'Science and Technology in the Workplace' using many real-life examples and illustrations to which you can relate. In other words, I try to make my course material as up-to-date and culturally familiar as possible. Second, I regularly embed focused, concise video clips (typically two to nine minutes in length) into my PowerPoint presentations to reinforce whatever knowledge I am presenting. The use of short video clips helps you effectively remember the knowledge I am trying to impart.	I assess your ability to apply what you have learnt by asking you to *use* your newfound factual (and conceptual) knowledge.

Prerequisites:

There are no prerequisites for this course other than an inquisitive mind and academic enthusiasm. If you have previously taken (or are currently taking) other SOSC classes that focus on issues involving 'science, technology, and society' (such as SOSC 1110, SOSC 1130), you may find it a little easier to keep up with the pace of this course.

Requirements:

Students are expected to attend all lectures and complete all readings. It is in your direct interest to attend lectures as often and regularly as possible, as ALL exam questions are derived DIRECTLY from lectures and, by extension, readings. Furthermore, during certain weeks (see below), you will be

undertaking in-class tasks, for which attendance is required, that entail answering discussion questions in groups.

Grade Distribution and Breakdown:

The expected grade distribution (which is subject to change under special or unforeseen circumstances) is as follows:

A	15%
B	40%
C	35-40%
D	5%
F	Remainder

The course grade will comprise five components:

	Type	***Comprising***	***Time***	***Format***
1. Mid-Term Exam	Individual	25%	During *or close to* Week 7	Short and Long Answer Questions
2. Final Exam (cumulative)	Individual	30%	End of the semester	Short and Long Answer Questions
3. In-class mini quizzes	Individual	20%	During class time throughout the semester	Multiple Choice questions
4. Group reports (based on group discussions) on 'discussion questions' posed by instructor	Group	20% (Four reports—each report to comprise 5%)	Week 4, 6, 9, 10, 11 (the best FOUR scores from these five weeks will be chosen)	Written reports (one page, type-written, in 12-point Times New Roman font, with 1″ margins)
5. In-class participation	Individual	5%	During class time throughout the semester	Open-ended

1. All five evaluation components will be based on some combination of the following:
   a) Lecture notes/material
   b) Assigned readings
   c) Video clips shown in class

2. The final exam will be cumulative, covering all course content (i.e., everything we have learnt in class will be included on the final exam) although it will emphasize material learnt after the mid-term exam.

3. During five of our classes, students will be given one or more 'discussion question(s)'. This/these discussion question(s) will need to be understood and evaluated during class in GROUPS and answered jointly by these GROUPS. (Students are required to form groups of six to eight students by the end of Week 3.) After every in-class GROUP discussion, each GROUP will be required to submit a report via E-MAIL to sosn@ust.hk AND daphnedy@ust.hk at the end of the class (so that at least one member of the GROUP should bring a notebook computer or other relevant writing device to class). Each report is to be typewritten, one page in length, using 12-point Times New Roman font with 1″ margins on all four sides of the page, listing GROUP member names and student IDs in the page HEADER. We will work on discussion questions during Weeks 4, 6, 9, 10 and 11 (subject to change). All

GROUPS will be required to work on all five discussion questions, but each GROUP'S ***FOUR BEST SCORES*** (out of the five) will be chosen. Each GROUP REPORT will comprise 5% of the overall course grade. If any group member is absent on that day, that group member will NOT receive credit for the group work.

4. I encourage class participation. Any time a student participates intelligently with a question, remark, opinion, idea, reflection, etc., his/her participation will be noted and he/she will be rewarded (mere yes/no answers will *not* count). Regular participation throughout the semester will result in 5%.

In-Class Mini Quizzes:

5. *Approximately* 25 in-class mini quizzes will be conducted over the course of the semester during class time.

6. In-class mini quizzes will **not** be announced in advance but instead will be conducted randomly and spontaneously. It is possible that in some classes there will be no in-class mini quizzes while in others we will have more than one in-class mini quizzes. in-class mini quizzes may be conducted at any time during a class: at the beginning, during the middle, or at the end of a session.

7. If you answer an in-class mini quizzes correctly, you will receive: 10 points
   If you answer an in-class mini quizzes incorrectly, you will receive: 4 points
   If you do not answer the in-class mini quizzes at all, you will receive: 0 points

8. If you miss any given in-class mini quizzes, <u>for any reason</u>, there will be no opportunity to retake that particular in-class mini quizzes, nor will you be granted an exemption from that particular in-class mini quizzes.

9. I shall select, AT THE END OF THE SEMESTER, from the approximately 25 in-class mini quizzes, a pool of 22 to serve as the basis of the overall in-class mini quizzes grade component. We will not know at any point during the semester which 22 in-class mini quizzes are to be selected for consideration. From this pool of 22, I shall choose your 20 *best* scores. Your 20 best scores will then serve as your in-class mini quizzes grade component.

Readings:

Many of the readings for the class are from the following core texts:

Watson, Tony J. 2008. *Sociology, Work and Industry*. 5th ed. New York: Routledge.

Boreham, Paul. 2008. *New Technology @ Work*. New York: Routledge.

Optional readings, taken from books, journal articles, or newspaper clippings, will be available on Canvas. A small number of short readings may be distributed in class.

There is, however, NO TEXTBOOK THAT STUDENTS NEED TO BUY.

Although the average amount of reading is 20 pages per week, the actual amount will vary, sometimes considerably. During weeks when there are fewer than 15 pages to read, students are advised to read for the following week, when there may be significantly more than 15 pages required.

Academic Honesty:

HKUST as an institution demands academic integrity and has introduced regulations to back this up. As your instructor, I will apply these regulations as conscientiously and strictly as possible. To help students and staff, HKUST explains the regulations, aids with students in avoiding plagiarism, and sets out the role of faculty and staff when a case of cheating or plagiarism comes to their attention.

Schedule and Readings:

PART I: THE MANIFOLD FACES OF SCIENCE AND TECHNOLOGY IN THE WORKPLACE

Week 1: Tue 8 Sep, Thu 10 Sep **Introduction; Technology, Power, and the Foundations of the Industrial Workplace**

Compulsory:
Boreham, Paul. 2008. *New Technology @ Work*. New York: Routledge. [Ch.2/pp.13-42]

Optional:
Noble, David F. 1979. The wedding of science to the useful arts. In *America by design: Science, technology, and the rise of corporate capitalism*, by D. F. Noble. Oxford: Oxford University Press. [ch.1, 2, 3/pp.3–19, 20–32, 33–49]

Week 2: Tue 15 Sep, Thu 17 Sep **Technology and Power**

Compulsory:
Watson, Tony J. 2008. *Sociology, Work and Industry*. 5th ed. New York: Routledge. [Ch.5/pp.147–175]

Optional:
Winner, Langdon. 1999. Do artifacts have politics? In *The social shaping of technology*, edited by D. A. MacKenzie and J. Wajcman. Milton Keynes, UK; Philadelphia: Open University Press. [ch.1/pp.28–40]

Week 3: Tue 22 Sep, Thu 24 Sep **Scientific Management**

Compulsory:
Taylor, Frederic W. 1919. Chapter II. In *The principles of scientific management*, by F. W. Taylor. New York, London: Harper & Brothers. [ch.2/pp.30–83]

Optional:
Watson, Tony J. 2008. *Sociology, Work and Industry*. 5th ed. New York: Routledge. [Ch.4/pp.107–125]

Video: *Modern Times* (written and directed by Charlie Chaplin). Call Number: PN1997.A13 M63 1936

PART II: A MATTER OF SKILL

Week 4: Tue 29 Sep, NO CLASS **Machines and Deskilling**
Group Discussion and Report

Compulsory:
Boreham, Paul. 2008. *New Technology @ Work*. New York: Routledge. [Ch.3/pp.44-56]

Optional:
Noble, David F. 1999. Social choice in machine design: The case of automatically controlled machine tools. In *The social shaping of technology*, edited by D. A. MacKenzie and J. Wajcman. Milton Keynes, UK; Philadelphia: Open University Press. [ch.14/pp.161–176]

Week 5: Tue 6 Oct, Thu 8 Oct **New Technologies and 'Hidden Skills'**

Compulsory:
Boreham, Paul. 2008. *New Technology @ Work*. New York: Routledge. [Ch.9/pp.176-190]

Optional:
Zuboff, Shoshana. 1988. The abstraction of industrial work. In *In the age of the smart machine: The future of work and power*, by S. Zuboff. New York: Basic Books. [ch.2/pp.58–96]

Week 6: Tue 13 Oct, Thu 15 Oct **Skill Debates**
Group Discussion and Report

Compulsory:
Boreham, Paul. 2008. *New Technology @ Work*. New York: Routledge. [Ch.8/pp.149-175]

Optional:
Vallas, Steven Peter. 1990. The concept of skill: A critical review. *Work and Occupations* 17 (4):379–398.

Week 7: Tue 20 Oct, Thu 22 Oct **Review, Mid-Term Exam, Mid-Semester Evaluation**

Week 8: Tue 27 Oct, Thu 29 Oct **Technology in a Knowledge-Based Economy: The Services**

Compulsory:
Watson, Tony J. 2008. *Sociology, Work and Industry*. 5th ed. New York: Routledge. [Ch.3/pp.74–106]

Optional:
Leidner, Robin. 1993. *Fast food, fast talk: Service work and the routinization of everyday life*. Berkeley: University of California Press. [ch.1, 2, 3/pp.1–23, 24–43, 44–85]

Video: *The Big One* (written and directed by Michael Moore). Call Number: HF5549.5.D55 B54 1998

PART III: WORKPLACE ORGANIZATION

Week 9: Tue 3 Nov, Thu 5 Nov **Bureaucracy as a Technology of Workplace Order**
Group Discussion and Report

Compulsory:
Weber, Max. 1946. Bureaucracy. In *From Max Weber: Essays in sociology*, edited by M. Weber, H. H. Gerth, and C. W. Mills. New York: Oxford University Press. [ch.8/pp.196–244]

Optional:
Watson, Tony J. 2008. *Sociology, Work and Industry*. 5th ed. New York: Routledge. [Ch.4/pp.125–146]

Week 10: Tue 10 Nov, Thu 12 Nov — **Work Practices in Technical Settings**
Group Discussion and Report

Compulsory:
Vinck, Dominique. 2010. *The Sociology of Scientific Work.* Cheltenham: Edward Elgar. [Ch.4/pp.83-110]

Optional:
Vaughan, Diane. 1996. *The Challenger launch decision: Risky technology, culture, and deviance at NASA.* Chicago: University of Chicago Press. [ch.1, 2, 6/pp.1–32, 33–76, 196–237]

Week 11: Tue 17 Nov, Thu 19 Nov — **Technology and Work in the Home**
Group Discussion and Report

Compulsory:
Watson, Tony J. 2008. *Sociology, Work and Industry*. 5th ed. New York: Routledge. [Ch.6/pp.176–225]

Optional:
Cowan, Ruth Scwartz. 1999. The industrial revolution in the home. In *The social shaping of technology*, edited by D. A. MacKenzie and J. Wajcman. Milton Keynes, UK; Philadelphia: Open University Press. [ch.20/pp.281–300]

Week 12: Tue 24 Nov, Thu 26 Nov — **How Do Scientists Work? Perspectives on Science as a Form of Work**
&
Technical Work and the Invisible Technician

Compulsory:
Vinck, Dominique. 2010. *The Sociology of Scientific Work.* Cheltenham: Edward Elgar. [Ch.7/pp.194-231]

Optional:
Merton, Robert King. 1973. The normative structure of science. In *The sociology of science: Theoretical and empirical investigations*, edited by R. K. Merton. Chicago: University of Chicago Press. [pp.267–278]

Shapin, Steven. 1989. The invisible technician. *American Scientist* 77 (6):554–563.

PART IV: LOOKING AHEAD

Week 13: Tue 1 Dec, Thu 3 Dec — **Future of Technology and Work**

Compulsory:
Tingley, Kim. 2017. *Learning to Love Our Robot Co-Workers*. New York Times Magazine. 23 February.

Optional:
Boreham, Paul. 2008. *New Technology @ Work*. New York: Routledge. [Ch.7/pp.123-148]