

Course Title	: Technology and the Future of Mankind
Course Code	: CLD9021
Recommended Study Year	: Any
No. of Credits/Term	: 3
Mode of Tuition	: Sectional approach
Class Contact Hours	: 3 hours per week
Category in Major Programme	: CLD – Cluster Science, Technology, and Society
Prerequisite(s)	: N/A
Co-requisite(s)	: N/A
Exclusion(s)	: N/A
Exemption Requirement(s)	: N/A

Brief Course Description

This course aims to enable students to develop an informed opinion about what the influence of technology on the near-future of mankind might look like. To this end, we first discuss what technology is, and how technological progress relates to social progress. Then, we examine four major technological and social challenges: climate change, synthetic biology, nanotechnology, and superintelligence, and examine expert opinions about how these might influence mankind's future. We then discuss the question whether technology can be successfully regulated by laws or other forms of social control, or whether, on the other hand, it develops independently and largely out of social control. Finally, we examine three different and very influential visions of the future impact of technology (Kurzweil, Bostrom, Joy), and try to evaluate them according to what we learned before.

Aims

- To provide students with an overview of some technological developments that might crucially influence the future of mankind.
- To present some important contributions to the current discussion about these issues.
- To discuss the possibilities and limitations of regulatory approaches to technology, and the relationship between technology and democracy.
- To promote students' ability to make informed judgments about the relationship between today's technologies and developments that affect future society.
- To enable students to competently take part in the broader discussion about current technologies and their impact on the future.

Learning Outcomes

On completion of this course, students who successfully engage with the course material will be able to:

1. demonstrate their understanding of the current state of the discussion and future options regarding climate change, bioengineering, nanotechnology, and advanced artificial intelligence;
2. be able to evaluate these technologies in respect to their possible effects on the future of mankind;
3. evaluate critically the relationship between technological development, its regulation, and society;
4. apply the knowledge gained to critically engage with and discuss in depth some prominent visions of the future as proposed by technologists.

Indicative Content

I. Thinking about technology

- Definitions and conceptualisations of technology. Dusek: *Philosophy of Technology: An Introduction*, Ch. 2: “What is Technology?”
- Is technological and social progress accelerating? Leo Marx: *Does Improved Technology Mean Progress?*

II. Issues raised by particular technologies (selections)

- Climate change.
 - Collins, Colman et al: *The Science Behind Climate Change*. In: Teich (2013).
 - Victor, Morgan et al: *The Geoengineering Option*. In: Teich (2013).
 - Robock: *20 Reasons Why Geoengineering May Be a Bad Idea*. In: Teich (2013).
- Synthetic biology.
 - Presidential Commission for the Study of Bioethical Issues: *Applications, Benefits, and Risks of Synthetic Biology*. In: Teich (2013).
 - Kwok: *Five Hard Truths for Synthetic Biology*. In: Teich (2013).
 - Sandel: *The Case Against Perfection*. In: Teich (2013).
- Nanotechnology.
 - Kurzweil: *Nanoscience, Nanotechnology, and Ethics: Promise and Peril*. In: Teich (2013).
- Superintelligence.
 - Urban: *The AI Revolution. The Road to Superintelligence*.
 - Vinge: *The Coming Technological Singularity*.
 - Kurzweil: *The Singularity Is Near*. (Excerpts)
 - Bostrom: *Superintelligence: Paths, Dangers, Strategies*. (Excerpts)

III. Social and political control of technology

- Democracy, Politics and Policy. Technoregulation.
 - Teich: *Government and Technology*. In: Teich (2013).
 - Winner: *Do Artifacts Have Politics?* In: Teich (2013).
 - Latour: *A Collective of Humans and Nonhumans*. In: Kaplan (2009).
 - Sclove: *Strong Democracy and Technology*. In: Kaplan (2009).

IV. The future of humanity

- Kurzweil: *21st Century Bodies*. In: Kaplan (2009).
- Bostrom: *The Future of Humanity*.
- Joy: *Why the Future Doesn't Need Us*. In: Teich (2013).

Teaching Method

Sectional approach.

Measurement of Learning Outcomes

1. Students are required to regularly attend classes and to participate in class discussions (#3, #4). Their understanding is evaluated in the student presentation and the midterm and final examinations (#1).
2. In-class discussions and the presentation or term paper will give the students an opportunity to

- personally and critically engage with the theories and to apply what they have learned to practical cases (#2, #3, #4).
3. Term paper and student presentations will deepen the students' abilities to analyse technologies encountered in everyday life in respect to their possible future implications, and to give a reasoned assessment of the social and ethical issues that might arise from the use of these technologies (#2, #4).
 4. Active attendance and participation in class discussions will confront students with the diversity of opinions in class and also allow them to test their understanding of the theories by applying them to particular cases during discussions (#2, #3, #4).
 5. The mid-term and final examinations measure to what extent students have achieved an understanding of the principles of the technologies discussed in class (#1), as well as their knowledge of the current state of the literature surrounding these technologies (#1).

Assessment

- In-class participation: 10%
- Mid-term examination: 10%
- Student presentation: 20%
- Term paper: 30%
- Final examination: 30%

Required Readings (extracts; in order of importance)

- Kaplan, D. (ed.) (2009). *Readings in the Philosophy of Technology*. 2nd ed. Lanham: Rowman & Littlefield.
- Teich, A. H. (2013). *Technology & the future* (12th ed.). Boston, MA: Wadsworth.
- Smith, M. R. & Marx, L. (1994). *Does technology drive history?: The dilemma of technological determinism*. Cambridge, Mass: MIT Press.
- Bostrom, N. (2009). The Future of Humanity. *Geopolitics, History, and International Relations*, 1(2), 41-78.
- Kurzweil, R. (2006). *The Singularity is Near: When Humans Transcend Biology*. New York: Penguin.
- Vinge, V. (1993): *The Coming Technological Singularity*. NASA technical report CP-10129. Proceedings of the Symposium "Interdisciplinary Science and Engineering in the Era of Cyberspace."

Supplementary Readings (selected passages)

- Bostrom, N. (2014). *Superintelligence: Paths, dangers, strategies*. OUP Oxford.
- Latour, B. (1999). *A Collective of Humans and Nonhumans: Following Daedalus's Labyrinth*. In *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge, MA: Harvard University Press.
- Lessig, L. (2006). *Code Version 2.0* Basic Books.
- Lessig L. (1999). *The Law of the Horse: What Cyberlaw Might Teach*. Harvard Law Review Vol. 113:501.
- Urban, T. (2015). *The AI Revolution: The Road to Superintelligence*. Available online: <http://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html>