

“The History of Technological Development in Society”

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General Description of the course

The course consists of one module and is designed for master students of the National Research University Higher School of Economics (HSE). The course length is **114** academic hours in total of which **32** hours are class room hours for lectures and **82** hours are devoted to self study.

Pre-requisites

- Interest in technological development and innovation processes
- Creative thinking

Course objectives:

The course studies how technological and societal development have influenced and nourished each other. The lectures cover episodes of mechanization, communications, electronics, computers, power & energy, or military technology. The course builds on historical examples of technological development and societal change and comments and reflects on the two latest major publications on the subject, namely

Yuval Noah Harari (2018), *21 Lessons for the 21st Century*, Spiegel & Grau, ISBN 9780525512172.

Steven Pinker (2018), *Enlightenment now*, Viking, ISBN 9780525427575.

Abstract:

Humans interact with each other and their environment through technology - that is the use of materials, energy, tools, and complex machines. Technology has been designed and created to serve human needs and desires. On the other hand, technology has itself shaped human co-existence and societies and became a defining feature of human existence. This course studies the bidirectional nature of this relationship through discussing technology as the outcome of particular technical, historical, cultural, and political efforts and the societal consequences triggered through technological change. Also, the analysis will include how political, military, economic, social, and religious objectives have guided the design and use of technology.

Training objectives

Students will be familiarized with concepts of “technological lock-in”, path-dependencies, serendipity-effects and unintended consequences of new technologies. Also, we will discuss ethical and moral issues associated with technological choices.

1. Thematic Plan

Module	Topic	Total academic hours	Lectures (class hours)	Self study
Early technologies	From the emergence of Homo Sapiens to the Middle ages	15	4	11
	Technology and war: from ancient warfare to the Renaissance engineers	15	4	11
The age of discovery and scientific revolution	The telescope, the heliocentric worldview, the printing press and the measurement of time	14	4	10
	The laws of motion, universal gravitation, and electricity.	14	4	10
The 20 th century	The industrial revolution: The mechanization of the production process and the rise of the factory.	14	4	10
	The history of space exploration: Sputnik, the Apollo missions, the space race and new horizons.	14	4	10
	The history of car design: The Benz Motorcar, muscle and silhouette cars, and the most successful series of mass-produced cars.	14	4	10
	The history of electronic games: From arcade games to youth culture, Massive Online Games and Virtual Reality.	14	4	10
	Total	114	32	82

2. Education control forms

Final control (F): individual oral examination

Summary Table: grading scale

Ten-point scale [10]

1 – unsatisfactory
2 – very bad
3 – bad
4 – satisfactory
5 – quite satisfactory
6 – good
7 – very good
8 – nearly excellent
9 – excellent
10 – brilliant

3. Programme Contents

Lecture 1 Early technologies

Topic outline:

- The lecture discusses the emergence of the modern man (homo sapiens) and studies early technologies like hand axes or forms of artistic expressions like cave art. Then, we discuss selected technologies that shaped the early empires up to the middle ages.

Main references/books/reading:

Kelly K (2010): What technology wants, Viking. A summary video:
<https://www.youtube.com/watch?v=-KWCiO4NTNo>

Basalla G. (2010): The Evolution of Technology, Cambridge Studies in the History of Science.

Lecture 2 Technology and War

Topic outline:

- The history of War is shaped by the application of technology at the battlefields. We discuss the development from the beginning of mankind to the 16th century.

Main references/books/reading:

Black, J. (2013): War and Technology, Indiana University Press.

Lecture 3 The age of discovery

Topic outline:

- Renaissance geniuses like Leonardo da Vinci or Galileo Galilei and the introduction of technologies like printing or the clock tower.

Main references/books/reading:

Arnold, D. (2002): The Age of Discovery, 1400-1600, Routledge.

Lecture 4: Scientific Revolution and Enlightenment

Topic outline:

- Isaac Newton and the discovery of electricity.

Main references/books/reading:

Schiffer, M. B. et al. (2003): Draw the Lightning Down : Benjamin Franklin and Electrical Technology in the Age of Enlightenment, University of California Press 2003

Lecture 5: The industrial revolution

Topic outline:

- The rise of the factory, the mechanization of the production process, and the emergence of the steam engine

Main references/books/reading:

More, Ch. (2000): Understanding the Industrial Revolution, Routledge 2000

Lecture 6: The history of space exploration

Topic outline:

From the first satellites, the first man in space, on the moon and the international space station.

Erickson, Lance K. (2010) Space Flight: History, Technology, and Operations
Government Institutes 2010

Lecture 7: The history of car design

Topic outline:

From the Benz Motocar (1885) to the cars of pre and post WWII and the muscle cars, the silhouette cars - and the vision of the flying car.

Main references/books/reading:

Provided by the author

Lecture 8: The history of electronic games

Topic outline:

From arcade games to youth culture, Massive Online Games and Virtual Reality

Main references/books/reading:

Provided by the author