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The second semester of the programme is dedicated to a specific specialisation. You can choose among more than a dozen specialisations available in the European ESST network (including Maastricht University). You will attend the university offering this specialisation to follow an introductory course and write your master's thesis.

Click on the specialisations below for more information about the individual programmes, or visit the website of the international master's programme [European Studies of Society, Science and Technology](#).



Institute	Specialisation
Aalborg University	<p data-bbox="491 1104 1238 1133"><b><a href="#">Innovation Systems, Social and Ecological Change</a></b></p> <p data-bbox="491 1137 1458 1272">The objective of the specialisation on “Innovation Systems, Social and Ecological Change” is to stimulate a rethinking of sustainable development from the perspective of the globalising learning economy. These topics can be formulated within three interdependent themes:</p> <ol data-bbox="491 1276 1458 1451" style="list-style-type: none"><li data-bbox="491 1276 1198 1305">1. Innovation Systems and Sustainable Development</li><li data-bbox="491 1310 1458 1379">2. Ecological Change - Experiences from Greening of Industry, Organic Farming and Energy Production</li><li data-bbox="491 1384 1406 1451">3. Green Innovation Policy, Public Participation, and Environmental Impact Assessment</li></ol>
Alpen-Adria-Universität Klagenfurt (Austria)	<p data-bbox="491 1462 1126 1491"><b><a href="#">Governance, Innovation and Sustainability</a></b></p> <p data-bbox="491 1496 1458 1637">This ESST specialisation focuses on interrelationships between science, technology and innovation, governance, and sustainability. It will combine STS with other social science perspectives and explore selected case-studies in-depth.</p>
Autonomous University of Madrid	<p data-bbox="491 1648 1126 1677"><b><a href="#">Economics and Management of Innovation</a></b></p> <p data-bbox="491 1682 1458 1924">This specialisation analyzes the effects of public and private management on innovation performance and the effects of innovation within the economic process from different perspectives like economic theory, management, public policy, etc. It is a good option for those graduates who wish to focus their career and/or research on the field of innovation. The specialisation is aimed at graduates and engineers in any discipline. A basis in economics is especially valued.</p>

**Sustainability Transitions and the Geography of Innovation**

Lund University

This specialisation gives an overview of the most recent theoretical debates in the realm of 'sustainability transitions' and the 'geography of innovation'. It will provide an opportunity to engage with theoretical approaches from different disciplines (e.g. science and technology studies, institutional theory, economic geography and evolutionary economics) that are addressing questions of socio-technical change and innovation.

**Science and Public Policy**

Maastricht University

One of the most striking developments of contemporary governance is its increasing engagement with the world of science. This specialisation deals with the science-policy interaction by combining insights and methods from science and technology studies with those of public policy analysis (political science, political sociology, institutional economics). This specialisation allows students to concentrate on case studies of specific interest to them but analyzed using a mix of tools provided through lectures, seminar discussions, and assignments.

**The Theory and Practice of Risk Society**

Nicolaus Copernicus  
University in Toruń

This specialisation addresses the notion of the risk society in different areas of practice. It combines various theoretical, philosophical, and empirical approaches. The main idea is to focus on:

1. Broader perspectives within which a heightened understanding of technoscientific risks can be better developed (modernity, capitalism, gender issues).
2. Specific examples of technoscientific innovations which permeate through society and provoke social controversies. The main areas of concern are: medicine, ecology, food networks.

1. **Philosophy and History of Science and Technology**

This specialisation focuses on the history and philosophy of science and technology. It draws on a large group of specialists in ancient and modern philosophy, philosophy of knowledge, analytic and continental philosophy of science as well as various historians of science (senior and junior) including specialists in the history of science and technology in local contexts. The specialisation is especially appropriate for international students who want to work on topics related to the history of science and technology in the European periphery.

2. **Science, Technology and Sustainability: North-South Comparison**

The specialisation aims at providing an in-depth understanding of sustainability issues as they may be connected to specific technological and scientific artifacts and infrastructures. The emphasis will be placed on artifacts and technological-scientific networks of relevance to renewable and conventional energy, transportation, ICT, water management, infrastructures supporting natural conservation and biodiversity. Students will study and research how socio-technical changes interact with geopolitical variables, through a comparison of the experiences with technology and science in the European north and south.

3. **Enabling and Disabling Dimensions of Technological Change**

This specialisation is designed for students interested in the study of emerging technologies and their enabling and disabling dimensions. It starts with a historical introduction to computing, automation, communication and related technologies, followed by an introduction to STS approaches of the study of ability and disability. Special attention is paid to the study of competing socio-technical orientations and socio-technical tradeoffs, as they interact with the transformation of existing disabilities and abilities or the emergence of new ones.

4. **Law, Science and Technology**

This specialisation aims to show the interrelations and co-production of law with techno-sciences. Following the co-production idiom as developed by Sheila Jasanoff the specialisation sheds light on the institutions and actors that shape and construct innovation laws, regulatory science and civic epistemologies. The emphasis will be on how national and transnational institutions that produce science and technology policy think and act. State and Governmental Departments, Parliamentary Committees, City Councils Committees as well as Law Courts will be studied as loci where science and technology interact with the law and where techno-scientific and legal cultures are informed and co-constructed.

**Innovation Policy and Small States**

This specialisation aims to deepen students' knowledge of the role of the state in supporting and steering innovation processes and on how, in turn, technological innovation affects the functioning of the public sector. The specialisation focuses mostly on the theoretical and practical analyses of public sector innovation capabilities. Estonia offers a unique setting for studying these interrelations as it is one of the most dynamic and digitalised countries in the world and a forerunner in building borderless digital societies and governments (see e-estonia.com, e-resident.gov.ee).

NKUA/NTUA, Athens

Tallinn University of  
Technology

University of Lisbon, Portugal	<p><b><u>Watermanagement and water uses:</u></b> public participation, stakeholders' involvement and the role of science This specialisation presents water as a resource that crosses several boundaries: areas of knowledge (environmental engineering, hydrogeology, hydrology, sociology, governance and policy studies, developmental studies), different actors (users, policy makers, scientists), institutions (in different territorial levels), and cultural elements. The specialisation's strength is a comparison of cases and an interdisciplinary approach based in STS and participation approaches and dialogic perspectives.</p>
Université Catholique de Louvain	<p><b><u>Ethical and Philosophical Stakes of the Sciences in Societies</u></b> In the last decades, the space occupied by science in our society has profoundly changed. The neutrality of science, epistemological and social, has been called into question. Integrated to research development, science is now sometimes considered as a simple element of a particular economic system. Such a position calls for a critical analysis. The complexity of the sciences and societies relations implies epistemological studies that aim to better specify the originality of science as a knowledge system. In addition, each particular technology interferes with social mechanisms according to modes that call for an ethical evaluation.</p>
University of Oslo	<p>1. <b><u>Science and Technology in Politics and Society</u></b> This specialisation focuses on the following three main topics:</p> <ul style="list-style-type: none"><li>• The Climate Society: Knowledge, Politics and Practices of Transformation</li><li>• The Good Economy: Values and Controversies in politics of the environment, politics of care and the life sciences</li><li>• Social Media, Digital STS, Market Research and The Public</li></ul> <p>2. <b><u>Innovation and Global Challenges</u></b> Science and innovation are called upon to solve some of the most pressing problems of world today, such as economic development, climate change and global health. But why does economic growth differ so much in the first place? Can university-based research really solve health problems in developing countries? Why do current climate change solutions to such a high degree emphasize development of new technologies? The course will focus on four main topics:</p> <ul style="list-style-type: none"><li>• Differences in growth and dynamics</li><li>• System transition</li><li>• The role of public research organizations</li><li>• Management of innovation</li></ul>
University of Strasbourg	<p><b><u>Environmental Sciences &amp; Management practices in the Anthropocene</u></b> Environmental sciences and engineering are the main pillars of environmental management. They provide measuring and modeling instruments, design infrastructures, and elaborate technologies that fuel environmental policies and innovations. The aim of the specialization course is twofold: 1. It provides students with elements of the history of the environmental sciences and engineering; 2. It explores the multiple ways in which these fields enact environmental management.</p>

**Science and Environment in Society; Science and Environmental Communication**

University of Trento

This specialisation combines insights and methods from STS with those from related fields of environmental analysis (sociology, policy studies). It deals with environmental challenges in close connection with fields like STS and science communication. It also looks specifically at the role of scientific expertise in the context of environmental policy making and how such expertise is communicated and perceived within society. The specialisation allows students to concentrate on case studies of specific interest to them using a mix of tools provided through lectures, seminar discussions, and assignments.

ESST also has a double-degree programme with the [Higher School of Economics in Moscow](#). ESST students can thus also spend their specialisation phase in Moscow.

Master's Programme

## **Semester 1**

Faculty of Arts and Social Sciences

# **Introduction in Society, Science and Technology Studies**

### **Full course description**

The basic characteristic of the ESST programme is an insistence on the necessity to think about social, cultural, historical, political and economic circumstances in order to understand the evolution of science and technology. The development of science is often seen as, in essence, an autonomous process - a process of gradual accumulation of knowledge, driven by purely internal imperatives, such as the search for truth. In the same vein, technology has been largely considered as a process of applied science, a kind of "lesser cousin", which simply follows from previous scientific advance. The field of Science and Technology Studies (STS) challenges this perspective. The first module in the ESST programme introduces students to the field of STS, and lays the foundation for new ways of understanding. Students get acquainted with a number of perspectives that integrate scientific and technological development with its wider contexts, and that show how science and technology both shape and are shaped by powerful social, economic, cultural, and political forces. This is true for the past as well as the present and the future, and hence students will both grasp how things have happened and how they may be shaped to create a better world tomorrow.

### **Course objectives**

After this module, students are able to explain the differences between Technological determinism, Social determinism, and STS-approaches (including social constructivism, co-construction of science, technology, and society). In addition, students are able to explain the methodologies of Social Construction of Technology, Actor-Network Theory, and Large Technical Systems.

Furthermore, this module trains students to do independent library searches, to argue a standpoint, and to apply theories fruitfully to a case of choice.

## Recommended reading

- Bijker, W.E., Hughes T.P., & Pinch T. (2012). The Social Construction of Technological Systems. New Directions in the Sociology and History of Technology, Cambridge MA.: MIT Press.
- Sismondo, Sergio. 2010. An Introduction to Science and Technology Studies. 2nd ed. Chichester: Wiley-Blackwell.

EST4000

Period 1

30 Aug 2021

24 Sep 2021

[Print course description](#)

ECTS credits:

6.0

Instruction language:

English

Coordinator:

- [G.J. Somsen](#)

Teaching methods:

Assignment(s), PBL, Work in subgroups, Lecture(s), Skills, Training(s)

Assessment methods:

Participation, Final paper, Assignment

Keywords:

Sociology of science & technology, technological determinism, Social Construction of Technology, Actor-Network Theory, Large Technological Systems, philosophy and ethics of science & technology  
Faculty of Arts and Social Sciences

## Science and Technology Dynamics

### Full course description

From a policy perspective a need has been felt to better understand the innovation process and to determine how, through policy measures, this process may be strengthened to provide impetus for sustained economic growth - arguably a major policy priority for nation-states around the globe. An outcome of these developments has been the emergence of government-sponsored projects to capture the impacts of technology and R&D on national economic performance. The fourth module of the ESST course examines the dynamics of science and technology from an Economics and policymaking perspective. Moving beyond the narrow and mechanistic confines of mainstream economics, the module draws on concepts from evolutionary and institutional economics to provide systemic perspectives on the role of technology in economic development. Module 4 provides the students with an understanding and appreciation of the innovation process as viewed from the evolutionary, institutional, and systems- based perspectives and how this understanding may be applied in critical examination of STS-related areas of interest.

## Course objectives

The course aims to provide students with an introduction into some of the key concepts and ideas on innovation, including evolutionary, institutional, and responsible innovation. Students will be assessed on their ability to apply such concepts while analysing STS topics of their own choice, and also write a policy brief on this.

## Prerequisites

Successful completion of module 1, 2 and 3.

## Recommended reading

See coursebook

EST4003

Period 2

22 Nov 2021

17 Dec 2021

[Print course description](#)

ECTS credits:

6.0

Instruction language:

English

Coordinator:

- [H. van Lente](#)

Teaching methods:

Lecture(s), Skills, Training(s), PBL, Assignment(s)

Assessment methods:

Take home exam, Participation, Assignment

Keywords:

Economic growth, Innovation, Institutions, Transitions, Network-based Industries, Appropriation Regimes, economic indicators

Faculty of Arts and Social Sciences

## Science and Technology in the Making: Entering the World of the Laboratory

### Full course description

Students will be introduced to the way experimental research programs are set up and how they involve negotiations, interests, and have political as well as cultural relevance. The Science Studies perspective that we will use, involves a close look at the actual way scientists work in establishing facts. Facts are not discovered by scientists in any simple sense of the word. Their establishment results from complex processes involving heterogeneous networks of scientists, machines, techniques, institutions, publication pressure, intellectual property rights, political interests, skills, corporate labs versus public labs, role of industry, state and military, commercialization, knowledge,

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strategies, choices, patents, ethical conflicts, controversies, innovations, etc. Establishing facts, in other words, is a heterogeneous mixing of humans and non-humans, facts and artefacts, fictions and realities. Therefore, we will take a closer look at this process. Additionally, the course includes discussion sessions with scientists from the life sciences as well as a in-depth interview by students (in teams) in a lab to study real science-in-action. In terms of knowledge to be acquired, students are expected, at the end of the course period, to have an advantaged understanding of the way science in action actually functions. This includes their internal functioning, the way they fulfil various functions in modern societies (industry, state, commerce and military) and the way they relate to the wider scientific community and sustain links with industrial contexts.

### Course objectives

The primary aim of this course is to help students to understand the complexities involved in producing and the disseminating of scientific knowledge. In essence, this course is an introduction to science studies at three levels: a micro-analytical perspective on the complexities involved in the processes of building up scientific facts; a meso-analytical perspective on the altered institutional ecologies; and a macro-analytical perspective on the role of industry, the state and society at large.

Students are expected, by the end of this course, to understand how science is actually functioning, including their internal organization, how they fulfil various functions in modern societies, and the way they relate to industry, government and other scientific centres.

### Prerequisites

Successful completion of module 1

### Recommended reading

- Kleinman, D.L. (2003). *Impure Cultures: university biology and the world of commerce*. Madison: The University of Wisconsin Press.
- Sismondo, Sergio (2010). *An Introduction in Science and Technology Studies*. 2nd revised ed. Oxford: Wiley-Blackwell Publishing.

EST4001

Period 1

27 Sep 2021

22 Oct 2021

[Print course description](#)

ECTS credits:

6.0

Instruction language:

English

Coordinator:

- [J. Mesman](#)

Teaching methods:

Lecture(s), Presentation(s), Research

Assessment methods:

Participation, Presentation

Keywords:



## Interpreting the History of Science and Technology

### Full course description

The third module trains students in historiographical awareness and introduces them to historical methods. Two historical sub-disciplines are under scrutiny, namely History of Science and History of Technology. The first half of the course deals with (re)interpretations of the Scientific Revolution (particularly the role of experiments and mathematical and mechanical ways of explanation). The second half deals with the Industrial Revolution and the history of technological modernisation in the 19th and 20th centuries. The module asks questions going beyond a mere “what happened?” by problematising historical events and developments in order to force students to reconsider what it meant to become (and what it means to be) modern. The module thus examines history as a subject of interpretation juxtaposing different historiographical perspectives.

### Course objectives

After following this module, students are able to explain and analyse the historical development of science and technology, including the Scientific Revolution, the Industrial Revolution, modernisation, the mathematisation of science, the relation between empiricism and authority, and the link between technology and the nation. In addition, they are able to analyse and evaluate different interpretations and perspectives of such developments. To do so, students are introduced to the analysis and evaluation of historical sources.

### Prerequisites

Successful completion of module 1 and 2.

### Recommended reading

see course book

EST4002

Period 2

25 Oct 2021

19 Nov 2021

[Print course description](#)

ECTS credits:

6.0

Instruction language:

English

Coordinators:

- [V.C. Lagendijk](#)
- [O. Melsted](#)

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Teaching methods:

Lecture(s), Skills, Training(s)

Assessment methods:

Participation, Presentation, Final paper

Keywords:

revolution, Industrial Revolution, modernisation, Historiography

Faculty of Arts and Social Sciences

## Politics of Knowledge

### Full course description

The fifth module addresses the political dimension of contemporary science and technology. How is the production of scientific and technological knowledge both connected to and constitutive of power relations? The module draws on scholarship in science and technology study that has probed how knowledge claims have politics<sup>1</sup>, in the sense that they are 1.) shaped by selective and context-bounded practices, values and interests, and 2.) help to create, maintain, legitimize the use of power. In stark contrast to a purely political science-based perspective on power, the course seeks to integrate historical and anthropological methods that explain the contingent nature of knowledge and its related politics. In each seminar students will be made aware to which extent complex social histories and social worlds are embedded in the concepts, theories, classifications, and narrative by which techno-scientific issues are identified, framed and contested. Finally, a main motive of the course, is to open science and technology for politization and democratic debate.

### Course objectives

The course is meant to introduce students into the analysis of the political dimensions and implications of science and technology in contemporary societies.

### Prerequisites

Successful completion of the previous modules of Semester 1.

### Recommended reading

See course book

EST4004

Period 3

3 Jan 2022

28 Jan 2022

[Print course description](#)

ECTS credits:

6.0

Instruction language:

English

Coordinator:

- [J.D. Lachmund](#)

Teaching methods:

PBL, Lecture(s), Skills, Presentation(s)

Assessment methods:

Final paper, Participation

Keywords:

risk society; politics & policy; controversies; expert; citizen, participation; media

## **Semester 2**

Faculty of Arts and Social Sciences

### **Science and Public Policy**

#### **Full course description**

One of the most striking developments of contemporary public policy making governance has been the increasing engagement with the world of science, broadly interpreted as including social and natural sciences. This is no longer only the case for the special domain of research and development policy where public authorities seek to actively promote scientific and technological innovations. Within the recent decades nearly all domains of public policy-making have become profoundly "scientized": be it the negotiation of a climate policy agreement, endorsement of a new method or means of medical therapy, release of a genetically modified organism, treatment schemes for sexual delinquency, regulation of financial instruments and trade, public aid programs to combat poverty or transfer of technologies to developing countries. There is barely an area of governance where policymakers do not base their decisions on the scrutinized evaluation and consultation by scientific or professional experts. The evolution, structure and the wider social implications of this tightening nexus between science and policy are the themes of this specialization. By addressing this and related questions this specialization program provides its students with the reflective resources necessary to understand and scrutinize the ways in which public policy operates under the conditions of an emerging knowledge-society. This specialization will prepare the students for a broad spectrum of professional functions related to the formulation, execution, and the consequences of science- based policies.

#### **Course objectives**

The specialization combines insights and methods from science and technology studies from the core of the ESST program with those of related fields of public policy analysis (political science, political sociology, institutional economics). The specialization deals with the phenomenon of science-policy interaction as a general phenomenon of contemporary society. The students will gain in-depth appreciation of different methods, theories, and practical tools to analyze complex policy problems and to identify and evaluate their normative implications. This specialization allows students to concentrate on case studies of specific interest to them but analyzed using a mix of tools provided through lectures by the faculty, guest lectures, seminar discussions, and assignments. While participants will become technically equipped, they are also encouraged to develop a sense of humility about the limits of their tools and the relative adequacy or inadequacy of alternative models for decision making. Most importantly, the participants will learn how to communicate their expertise concisely and convincingly.

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EST4008

Period 4

31 Jan 2022

25 Feb 2022

[Print course description](#)

ECTS credits:

8.0

Instruction language:

English

Coordinator:

- [J.D. Lachmund](#)

Teaching methods:

PBL

Assessment methods:

Assignment, Final paper

Faculty of Arts and Social Sciences

## Extern

### Full course description

For further information please contact the course coordinator.

EST4901

Period 4

31 Jan 2022

25 Feb 2022

[Print course description](#)

ECTS credits:

8.0

Instruction language:

English

Coordinator:

- [G.J. Somsen](#)

Teaching methods:

PBL

Faculty of Arts and Social Sciences

## Thesis

### Full course description

Thesis topic

## Course objectives

To allow students to demonstrate their intellectual grasp of a relevant area and their ability to research and present a complex set of ideas.

## Prerequisites

ESST Semester 1 and successful completion of module 6

## Recommended reading

Depends on specialization and thesis topic

EST4800

Period 4

31 Jan 2022

30 Jun 2022

[Print course description](#)

ECTS credits:

22.0

Instruction language:

English

Coordinator:

- [G.J. Somsen](#)

Assessment methods:

Final paper

Keywords:

thesis; supervision; data collection & analysis; methodology; argumentation and writing skills