

Teaching Portfolio 2025, STGS

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Summer Semester 2025

Lecture period from **23. April 2025** to **25. July 2025**.

The History of Science in the Cold War

Type of seminar: Weekly Seminar

Teacher(s): Aske Hennelund Nielsen

SWS: 3.5

Dates and times: Thursdays from 9.00 to 12.30 OR Thursdays 13.00 to 16.30

Preliminary room: Either STGS Seminar Room 02.21 or Meeting Room 03.17

Relevant Departments: History; Sociology; Physics

Short Description:

With the Russian Federation's invasion of Ukraine in February 2022, the world has once again been forced into an East-West divide. The war has impacted countless sectors, a major one the area of science. Scientific cooperation and technological development have been severely impacted by the War in the Ukraine. Not only have expenditures in military science and technologies increased dramatically, scientific cooperation between the "East" and "West" has been cut-off, and new scientific findings that could have military use are kept secret and well-guarded. Sanctions on scientific research and international technological exchange have been put in place, with dubious results and unknown implications for the future. None of this is new. During the Cold War, from around 1945 to 1991, the Western bloc, led by the USA and NATO, and the Eastern bloc, led by the USSR and Warsaw Pact, clashed on the issues of science and technology. In many ways, the Cold War was defined by science and technology, however, the reverse is also true; science and technology was shaped and changed by the Cold War. The most striking example was the enormous, secret and scientifically ground-breaking work of the Manhattan Project in the USA, that led to the creation of the atomic bomb used to destroy the Japanese cities of Hiroshima and Nagasaki, and started the nuclear arms race that defined the Cold War. However, the Manhattan Project, nuclear energy and atomic weapons were just one of several Cold War scientific and technological

developments that still defined human existence to this day. The aim of this course is to give an introduction to the history of the Cold War, the historiography of Cold War Studies and the History of Science during the Cold War.

Approaching the subject from varied perspectives, the course offers several vantage points to view science, scientific developments and the role of scientists during the Cold War and beyond. The aim is also to provide the students the opportunity to critically reflect on current societal debates on the role of science and technology, informed by historical precedence and developments.

Radiation Objects that Made Science History

Type of seminar: Block Seminar

Teacher(s): Maria Rentetzi, Aske Hennelund Nielsen

SWS: 3

Dates and times: 23. April 2025 (Introductory session);
25. April 2025;
26. April 2025;
2. May 2025;
12. June 2025;
13. June 2025.

Preliminary room: Either STGS Seminar Room 02.21 or Meeting Room
03.17

Relevant Departments: History; Sociology; Physics; Medicine

Short Description:

In 2009, the Science Museum in London conducted a public poll to decide the objects “that made the biggest mark on history”.¹ One of the most popular objects chosen was x-rays, that not only “led to a radical new diagnostic tool for doctors” but also initiated the first regulations on radiation safety. Scientific objects have long fascinated, caused fear and sparked debates, and perhaps few more some than Radiation Objects. From the discovery by Röntgen in 1895, to the atomic bombings of Hiroshima and Nagasaki in 1945, to the reactor meltdown of the Chernobyl Power Plant in Ukraine in 1986 and beyond, radiation objects have made Science History. Historians of science have long recognized the power of objects, and with this course, we wish to focus on objects and their materiality, specifically radiation. This course focuses literary on new “objects of knowledge”, in order to explore the history of radiation protection throughout the 20th century. At the same time, it goes one step forward and asks what has been the role of materiality and its politics in the production of scientific knowledge. As a way to understand how epistemic authority has been bestowed on objects, even those ones that had nothing to do with science, we introduce the term of “epistemology of the familiar” to highlight how scientific objects became “everyday objects”, as well as how radiation objects were debated through the exhibitions of museums.

Winter semester 2025

Lecture period from **13. October 2025** to **6. February 2026**

Geographies of Science

Type of seminar: Weekly Seminar

Teacher(s): Aske Hennelund Nielsen

SWS: 3,5

Dates and times: Wednesdays from 9.00 to 12.30 OR Wednesday 13.00 to 16.30

Preliminary rooms: Either STGS Seminar Room 02.21 or Meeting Room 03.17

Relevant departments: History; Sociology; Geography

Short Description:

Science and geography are interlinked aspects, that have informed each other in numerous ways over centuries - and continue to do so to this day. From the country estate in the British countryside of Lord Rayleigh in the 1800s, to the learned back room 'Wunderkammer' in Renaissance Bologna, to the secret science cities of the Soviet Union in the 20th century and today's elaborate mega laboratories like CERN, where thousands of scientists work with equipment that covers and has changed thousands square meters, science has indeed been carried out in diverse locations and spaces. In this seminar, we will examine some of these areas, and study how science has been affected by its geography, and vice versa, how geography has affected science in many different ways. We will explore different locations and space where science has been carried out, and also study how geographies have affected scientific results and practices. The seminar will primarily be chronological, focusing particularly on the Renaissance period to the early 20th century, using various cases of science and its geographic connections. The seminar will provide an overview of the history of science focused on geographies and spatiality, that also has relevance for other fields, for instance physics, medicine, geography, sociology, and history. In the seminar will use various teaching methods, including student

presentations, written assignments, quizzes and more to understand the geographic nature of science.

The History of Nuclear Medicine

Type of seminar: Block Seminar

Teacher(s): Maria Rentetzi, Aske Hennelund Nielsen

SWS: 3

Dates and times: TBA

Preliminary room: Either STGS Seminar Room 02.21 or Meeting Room
03.17

Relevant Departments: History; Sociology; Medicine; Medical Engineering

Short Description:

According to the American National Institute of Biomedical Imaging and Bioengineering, nuclear medicine is a "... medical specialty that uses radioactive tracers (radiopharmaceuticals) to assess bodily functions and to diagnose and treat disease." Behind this unassuming description of a modern medical field, there is a rich and entangled history dating from 1895 to the present. In this seminar, we provide an overview of the field of Nuclear Medicine, starting from the early history of how x-rays and radium were turned into medical technologies and moving to the Cold War when radioactive isotopes were used, commodified and sold worldwide. As part of this, we explore how nuclear medicine was extended into various medical systems around the world. Our focus with this seminar is on the interconnected aspects of medicine, science and technology. We also examine how different scientific and medical actors collaborated and came together to form a new medical discipline in the post-war period. We pay special attention to the objects of nuclear medicine, both the highly-advanced machines and more mundane equipment that in distinct ways and at various points helped to develop the field. Thus, the history of Nuclear Medicine is both a history of continuities and discontinuities; It could be told through the introduction of novel technologies and subfields of knowledge; of interdisciplinary exchanges; of the institutionalization of new medical specialities. The seminar uses an innovative examination form where the students write biographies of various nuclear medicine objects and connect them to the wider history of nuclear medicine in the 20th century.

Additional courses

Prof. Rentetzi will be on sabbatical the winter semester of 2025. Below you can find the courses she has been offering since 2021 at the FAU and will continue to do so.

Radiation Protection: A Global Challenge with a Rich History

Type of seminar: Weekly

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Open to all

Short Description:

Radiation Protection focuses on one of the major global challenges today—how to protect humans and the environment from ionized radiation—from a historical point of view. The course explores the kind of organizational structures, material resources, knowledge systems, and diplomatic practices that allowed the social and political shaping of the field. Focusing mainly on the period before World War II, historians have highlighted scientists' struggles (a) to define the appropriate unit of radiation; (b) to invent suitable measurement devices; (c) to detect and to agree on the effects of radiation on biological systems; and (d) to identify the acceptable risk of radiation exposure. The scientific controversies that emerged in these processes reveal the powerful role of those scientific institutions responsible for standards for radiation safety. In addition, the development of radium therapy in the US during this early period draws attention to the role of the radium industry and market in shaping notions of health and orthodox medical practices. After the World War II the mass quantities and new types of radiation and radioactive materials as well as nuclear medical technologies, forced new approaches in the field and created opportunities for the international regulation of radiation risks. Undoubtedly, the international regulatory system that took shape at the end of the 1950s was a result of the geopolitical division of the Cold War. The course explores this rich history in detail bringing front and center social and gender issues. At the same time, it questions the role of international organizations in regulating

radiation today. It is a highly interdisciplinary course bringing perspectives from History of Science, Technology and Medicine, Science and Technology Studies, and Gender Science Studies. It is open to students from all faculties and across the university. Students are expected to read very closely the assignments, participate in the discussions, and produce a short research paper or multimedia project at the end of the seminar. The option of a take home exam is also possible.

What is Science Diplomacy?

Type of seminar: Block seminar

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Open to all

Short Description:

In the time of a pandemic who does get which vaccine, when, and from whom? In case of extreme weather events who does get access to clean water, food, or energy - and how? How do international organizations regulate nuclear energy? How are international or supranational science and technology projects planned, coordinated and realized? And who are the actors who conduct science and technology diplomacy in the Post-World War II international system and what they do? In short, how are geopolitics and international affairs intertwined and how do they depend on science and technology? This block seminar tackles the diverse notions of science and technology diplomacy. It is intended as an intense dialogue among senior scholars and advanced master and PhD students from different disciplines on how science and technology shape and are shaped by international affairs. As very few academic institutions thus far offer a course solely dedicated to the theory and practice of science diplomacy, FAU breaks ground and brings a fast-growing field of practice to the university classroom. The course is offered every other year on-line as a block seminar by the Chair of Science, Technology and Gender Studies. Students are expected to read very closely the assignments, participate in the discussions, and produce a research paper or multimedia project at the end of the seminar.

Nuclear History after WWII

Type of seminar: Weekly

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Open to all

Short Description:

During the 1920s and 1930s, the use of radiation by the military, in cancer therapy, and the cosmetic industry was conceived as the triumph of human civilization. The dropping of the atomic bombs during WW II forced the world to grapple with this distorting thinking and to reconsider the very term "civilization." The atomic bombs actually signified the end of the worldview that ignored the devastating effects of radiation and radioactive substances on both humans and the environment. Since then, nuclear science and technology have strongly shaped geopolitics and defined post WW II tensions between the U.S. and Russia. Throughout the Cold War the production of nuclear weapons, the race for preeminence in nuclear technologies and the rush to construct nuclear plants in order to produce electricity fundamentally altered not only national and international politics but social life as well. Over the course of the term, we will on a few recently published collections of essays on nuclear history in order to explore new transnational perspectives on issues such as nuclear war and accidents, regulatory institutions and international nuclear law, nuclear waste and world order. The course is an advanced seminar (Hauptseminar) and is offered for MA and advanced BA students of social sciences and humanities. Students of natural and technical sciences are welcome.

History of Science Laboratory: How to Organize a History of Science Exhibition

Type of seminar: Hauptseminar

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Open to all

Short Description:

Historians of science have recognized the power of exhibitions in engaging the public in the production of knowledge. Exhibitions, however, have the potential to do something more. They make political statements; they become sites for the visualization of different social futures. For example, in 1930 the U.S. Food and Drug Administration assembled a collection of products that illustrated shortcomings in the 1906 Federal Food and Drug Act, which prohibited interstate commerce in adulterated and misbranded food and drugs. The FDA exemplified the state of affairs in the marketplace with an exhibition entitled "The American Chamber of Horrors," which also included several radium products of the time. The exhibition shocked the public, which played a key role in reshaping drug provisions in the proposed law and in leading to the Food, Drug, and Cosmetic Act on 25 June 1938 (Law, 2006). This course resembles laboratory courses in the sciences where students are asked to conduct experiments. In our case and throughout the course, students will be asked to design an exhibition on a history of science topic. They will be provided with the required material and will have the chance to be creative and gain hands-on experiences in designing museum exhibitions.

Epistemology of the Familiar: An Exploration in Philosophy of Science

Type of seminar: Weekly

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Open to all

Short Description:

In 1994 Loraine Daston introduced (or better reintroduced) the term historical epistemology as “the history of the categories that structure our thought, pattern our arguments and proofs, and certify our standards for explanation.” A whole generation of historians of science employed historical epistemology as a way to study scientific knowledge by exploring the history of higher-order epistemic concepts such as objectivity, observation, and experimentation or the historical trajectories of epistemic things. This course briefly explores major works in historical epistemology by focusing on new “objects of knowledge,” new “styles of reasoning,” and new “modes of objectivity.” At the same time, it goes one step forward and asks what has been the role of materiality and its politics in the production of scientific knowledge. It further introduces the term “epistemology of the familiar” as a way to understand how epistemic authority has been bestowed on those objects that have little to do with science; how these same objects, which occupy the market as commodities as well as our everyday lives as expressions of our intimate desires, have been tweaked and adjusted; how they have been often returned to the site of their production, the scientific laboratory, for improvement and modification. In other words, how do mundane objects—transformed epistemic objects—by being familiar, become valuable sources of our knowledge about society and the world? For example, we ask how a humble materiality such as a box could be epistemologically important. Hence, the sociological and historical attention of this course is centered on the familiar that often remains unnoticed. The interest is not on the history of familiar objects but on the epistemic power that familiarity exercises on human lives.

Courses on Gender

The Gender of Things: How Epistemic and Technological Objects Become Gendered

Type of seminar: Hauptseminar

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Open to all

Short Description:

Do things have gender? What an unthinkable question especially to space engineers who put astronauts on the moon; to artificial intelligence researchers who construct humanoid robots to assist humanity in saving the planet; to physicists who investigate nature inside a scientific laboratory; to surgeons who struggle to save human lives in state-of-the-art operating theaters. Yet, what seems “unthinkable” to practitioners in science, technology and medicine, has been common knowledge to scholars working in the humanities and the social sciences: things could be and are gendered. This course addresses the processes of gendering things. It is an interdisciplinary approach to the relationship between gender and the material culture of technoscience, in other words, gender and contradictory cultural, economic and social values and meanings attributed to epistemic and technological objects. Focusing especially on all those things that lie on laboratory benches, engineers’ workshops and medical facilities, our goal is to expose the practices that attribute gender not only to objects but to whole disciplines as well. During the course we bring together scholarship from Science and Technology Studies and feminist materialism. Students are asked to read published work on the topic. Papers are pre-circulated and discussed in class. During the course we have the chance to discuss directly with the authors of some of the readings.

How Does Gender Shape Science?

Type of seminar: Weekly

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Primarily physics although open to all

Short Description:

Gender interacts with knowledge in multiple ways. From the very questions that we choose to ask or not to ask, to the way research is conducted, to the language and images we use for thinking, discussing and communicating, science reflects the gendered values of the societies that produced and consumed it. Organized around four broad themes that have structured main lines of research in gender studies -Intersections, Sites, Languages, and Images—the course explores ways that gender has historically influenced the development of scientific ideas and instances in which science naturalized gendered assumptions. During the course we will focus on the achievements of feminist historians and outline recent historical questions in the field of gender and science. We will explore sites beyond the academy and the traditional experimental laboratory. We will focus on the house, the field, and on a number of surprising places where knowledge is produced. In addition, we will explore how images and metaphors have shaped research in scientific fields such as physics.

The course will be primarily taught to the Department of Physics. Students from the Institute of Sociology and the Department of History are more than welcomed.

Women and Science: Is it Really an Outdated Topic?

Type of seminar: weekly

Teacher(s): Maria Rentetzi

SWS: 3

Dates and times: Offered every other year)

Preliminary room: STGS Seminar Room 02.21

Relevant Departments: Open to all

Short Description:

Why there are more women working in the humanities and social sciences and considerably less in the “hard” sciences and engineering? What has gender to do with the production of scientific knowledge and its application? How has the complex entanglement of women and knowledge production been evolved through time? What does it take to become a female scientist? This introductory course explores the historical role of women (and gender) in the construction of scientific knowledge from the 17th century to the present. It also focuses on the entanglements of gender and technology, surveying some historical but also recent work in the field. The course is intended to familiarize students with the history of women’s modes of participation in science and technology and offer theoretical approaches on women’s autobiographies and their work in a variety of scientific fields. It is considered as a survey course. Students are encouraged to reflect on their own gendered experiences in their encounters with science as students in laboratory and/or social sciences and in technological domains. The course is highly interdisciplinary, designed for students in the humanities and social sciences but also the sciences and engineering. Short scenarios will be handed and discussed also in class. Each student is expected to actively participate and to have read the assignments.