‘This thing called science’

A short course in science studies

In modern life, science is everywhere. The products of biomedical science and technology may help achieve a healthy society and economic progress. They may prolong life and make it more agreeable at the same time. But how much do we really know about the production, implementation and evaluation of scientific knowledge? What, exactly, is the basis for our belief in science? What sets it apart from common knowledge? Who should we trust in case two scientists disagree in a hotly debated issue? Is science a vocation or just another profession? Is scientific knowledge something special to be emulated, or ‘just another opinion’? How does science really work? Are scientific facts discovered or rather socially constructed and considered ‘true’ only after fierce debate? How are science and technology embedded in society and how do they change over time?

If you want to become a scientist – either an academic researcher or a scientifically educated professional with a job outside academia -, you should be aware of these and similar questions. You should not just know about the *contents* of scientific knowledge, but about its *context* as well.

This course sets out to create that awareness, aiming for broad scientific literacy. In nine Friday afternoon sessions, the historical, philosophical, sociological, commercial, ethical, political and personal dimensions of the biomedical sciences will be discussed. For those of you who are interested in a public debate that is now going on with regard to science and the university, see www.scienceintransition.nl and http://www.wetenschapsagenda.nl.

Speakers will provide one or two articles on the topic of their lecture, for pre-course reading. You are all expected to have them read before the meetings. For every session, five students will be appointed as (collective) chair. Together, they are responsible for the quality of the debate and the success of the meeting. They are expected to prepare for the meeting by formulating theses (*stellingen* in Dutch) on pre-circulated literature and post it to the community, in order to facilitate debate. Their theses will be discussed during the session.

Socializing with drinks: after every session, there will be drinks and an opportunity to ‘meet the speaker’. Grab this opportunity: these are experts in their field.

The Course Committee

Drs Maria van Dijk-Okla (secretariat: M.vanDijk-Okla@umcutrecht.nl)
Dr Saskia Ebeling
Prof.dr Frank Huisman (coordinator)
Prof.dr Frank Miedema
Prof.dr Gerard Pasterkamp
Prof.dr Berent Prakken
Prof.dr Harold van Rijen
Dr Ghislaine van Thiel

Topics and schedule

I. The roots of modern science

Date: 29 January 2021, 15.15-18.15

Location: online (MS Teams)

It has been argued that the period between the 1930s and the mid-1970s was the 'Golden Age' for medicine. Especially during the post-war years, medicine won major battles against smallpox, diphtheria, and polio. At the same time, open-heart surgery, organ transplants and test-tube babies became a reality. More recently, however, progress has slowed down and nearly come to a halt. While the scientific knowledge of human biology and diagnostics have vastly improved, the number of new cures has declined. What factors contributed to the almost godlike status of medicine before the 1970s? What caused the widening gap between achievement (in science) and advancement (in health care)?

Speakers: Prof. Frank Huisman (xxx); Prof. Frans van Lunteren (xxx)

II. Setting the scene: what is science and how is it regarded in society?

Date: 26 February 2021, 15.15-18.15

Location: online (MS Teams)

What is science? What sets it apart from other human activities? From what does science derive its special status? Is there such a thing as scientific objectivity? How to distinguish between science and pseudo-science? Is science separate from society, or rather embedded in it? During this session, the speakers will present different ways to reflect about science. Stressing the divide between what scientists claim to be doing and what they are actually doing, an overview will be given of the ideas about science that have been developed over the course of the twentieth century.

Speaker: Dr Sander Werkhoven (xxx)

III. The governance of science: from science in society to science with and for society

Date: 26 March 2021, 15.15-18.15

Location: online (MS Teams)

How should science be governed? Can traditional models of governing science – premised on the view of science as an autonomous, self-governing and self-correcting enterprise that should by and large be left alone by government – guarantee social progress and the pursuit of the public good? Focusing on examples of public controversy in the life sciences, the speakers will argue the need for new and deliberative approaches and frameworks that seek to embed scientific advance in and for society. A framework of responsible innovation will be presented both as an important means to help address global challenges and as offering a set of methodological tools aimed at engaging society around innovation processes and dynamics. The theory of responsible innovation will be examined in relation to three areas in the life sciences: genetically modified (GM) crops and foods, synthetic biology and poverty-related diseases in developing countries.

Speakers: Dr Ir Harro Maat (xxx); Prof. dr Philip Macnaghten (xxx)

IV. Scientific integrity

Date: 23 April 2021, 15.15-18.15

Location: online (MS Teams)

What can go wrong with science, and what can we do about it? Integrity is a highly cherished value among scientists, maybe more so than in other professional groups. A scientific researcher is supposed to devote his or her life to finding the truth about nature to the benefit of mankind. The only way to do so and succeed is to be a disinterested scholar following strictly methodological rules. Recent fraud cases suggest that things may be different. The sheer number of cases suggests that we are not just looking at individual flaws and whimsical behavior of vain scholars, but rather at a system failure. The incentive and reward system of modern science has led to publication pressure and calculating - sometimes even fraudulous - behavior. How to put the proper control mechanisms in place to guarantee moral integrity and scientific quality?

Speakers: Dr Ghislaine van Thiel (xxx); Dr Marcel van der Heyden (xxx)

V. The scientific entrepreneur: valorization or open science?

Date: 28 May 2021, 15.15-18.15

Location: online (MS Teams)

Since the 1970s, small-scale academic science has transformed into Big Science: it has become international, interdisciplinary and capital intensive. As a consequence, scientific research cannot be financed by public funding alone. More partners are needed, and corporative industry is happy to comply. In recent decades, we have seen the rise of public-private partnerships, of valorization incentives and of business models. Competition in academia and industry are reinforcing one another, leading to new understandings of intellectual property. How do these developments affect science? Given the new financial incentives on a highly competitive market, can scientists still be disinterested and value free? Have they ever been? Is the research agenda curiosity- or money-driven? Can it be both? Is moving between science and business a good thing or a dangerous liaison?

Speakers: Prof. Gerard Pasterkamp (xxx); Dr Oscar Schoots (xxx)

VI. Publish or perish

Date: 25 June 2021, 15.00-18.00

Location: online (MS Teams)

The dissemination of new knowledge is a precondition for progress in science. Publishing serves the goal of informing colleagues around the world, in an attempt to create synergy and collaboration in research. However, modern scientific research is not just about the Quest for the Holy Grail, but a highly competitive undertaking. Today, structures and incentives are put in place to measure quality and impact. The idea is to publish as many articles in high impact journals as possible, as the best way to get the next grant application awarded. However, mechanistic evaluation criteria don't do justice to the open-ended, curiosity-driven ideal of science. In the process, the scientist as communicator to his colleagues has developed into a calculating, secretive competitor moving on a market with scarce funds. What is the role of commercial scientific publishers in this process? This session will inform you about the latest developments in international publishing, and the ways in which the Scientific Citation Index has changed scientific practice beyond recognition.

Speakers: Drs Alina Helsloot (xxx); Dr Thed van Leeuwen (xxx)

VII. Medicine and the media

Date: 24 September 2021, 15.15-18.15

Location: XXX

Communication about scientific research is essential, but it should not just be limited to scientific peers. The general public has a right to know about science as well: first, because it is paying for it through taxes, but second and most importantly, because science is affecting our lives and futures in important ways. On a daily basis, we are informed by the media (newspapers, television, radio, the internet) about health issues, climate change and financial stability. All of this information is rooted in scientific research. However, how does that information travel from the lab to the media? These are important issues to consider: while scientific knowledge is hardly ever certain, uncontested or unambiguous, science mediators all have their own agenda. The most important stakeholders include scientists, public relations officials and journalists, each with their own interests, responsibilities and limitations. While scientists need good publicity for their research group to secure the next round of funding (which is why they tend to exaggerate their research findings) and p.r. officials want good publicity for their organization (so they write catchy press releases), journalists are pressed for time to make it to the next deadline and keen to attract readers with a good story (so they don't double check the catchy claims). Where does this leave the taxpaying public?

Speaker: Drs Rinze Benedictus (xxx)

Moving from Science in Transition to Open Science

In 2013, four Dutch scholars initiated the academic reform movement 'Science in Transition'. On their website (https://scienceintransition.nl/en), in their position papers and in many talks across the country, they presented their analysis of the state of science and the university, arguing that both of them are in need of fundamental reform. They held that science had become a self-referential system where quality was measured mostly in bibliometric parameters and where societal relevance was undervalued. They initiated a debate among scientists and policy makers in the Netherlands and even in Europe.

The course ‘This Thing Called Science’ intends to share the analysis of Science in Transition with PhD students of the Utrecht Graduate School of Life Science in an attempt to make them knowledgable about the world in which they are moving. Although the course is always much appreciated, students tend to get wary of just sticking to analysis and criticism. Therefore, we decided to invite one of the initiators of Science in Transition to tell us what has been accomplished since 2013.

Speaker: Prof. Frank Miedema (xxx)

VIII. Science and democracy: the distribution of knowledge and power

Date: 29 October 2021, 15.15-18.15

Location: XXX

It is often claimed that we are living in a democratic knowledge society. But what does that mean? At first sight, the phrase has a nice ring to it. It seems to refer to a society which is organized using the latest scientific principles: because society is transparent, with knowledge available to everybody, every citizen is capable to use his or her democratic participatory rights for the benefit of mankind. On closer examination however, it turns out that it is difficult to establish what the phrase means in practical terms. How do citizens – who are in effect laypeople - acquire knowledge? Is it possible for them to get to all relevant knowledge on an issue? If knowledge is power, shouldn’t we grant power to (scientific) experts? It seems like the logical thing to do, but then again: should we be happy to abstain from our democratic rights and let experts decide on issues that affect us all? What to do when experts disagree on the issue at stake? More often than not, ‘knowledge’ is not a value free phenomenon, but rather biased by political ideology or commercial interests. How to solve this paradox of democracy and technocracy? How to integrate science – that most successful knowledge creating system of all time – in a democratic society?

Speakers: xxx (xxx); Dr Udo Pesch (xxx)

IX. Closing session

Date: 26 November 2021, 15.15-18.15

Location: UMC Utrecht, XXX

During the closing session of this course, an internationally renowned scholar in the field of science studies will give a lecture on a topic of his or her choice. In previous years, the following people have enlightened us: Prof. Steve Fuller (Warwick University), Prof. Trevor Pinch (Cornell University), Prof. Wiebe Bijker (Maastricht University), Prof. Peter Galison (Harvard University), Prof. Göran Hansson (Karolinska Institutet), Prof. Paula Stephan (Georgia State University), Prof. Helga Nowotny (former President European Research Council), Dr Jack Stilgoe (University College London), Dr Katja Mayer (Universität Wien), Prof. Alan Irwin (Copenhagen Business School) and Prof. Sabina Leonelli (University of Exeter).

Speaker of 2021:
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