

Science Communication

What is science communication?

Rui Mata, HS 2025

Version: September 18, 2025

Course instructors



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<http://cds.unibas.ch>

<https://www.superdot.studio>

Learning goals (for the course as a whole)

This course aims to give a broad introduction to science communication. By completing the course, you can expect to...

- Get an overview of theories and principles of science communication
- Learn to critically evaluate and reflect on science communication
- Learn to develop visual communication strategies for different audiences and purposes

Goals for today

- Recognize the need for effective communication between science and the public, and reflect on the responsibility of scientists (including psychologists) in communicating science effectively
- Grasp the definition of science communication, including various forms and goals
- Become familiarized with the course structure, readings, and website

HOW SHOULD CITIZENS RELATE TO SCIENCE?

Discuss the role of science in society



Join at menti.com | use code 1350 9092

Scientists should inform the public about their work

4.5

I would like to take part in scientific research projects

3.0

People like me should have a say in deciding which topics scientists research

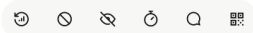
2.8

Science and research play an important role in my life

3.5

do not agree at all

agree completely



103 / 107



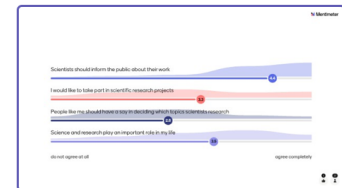
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SCICOM Session 1

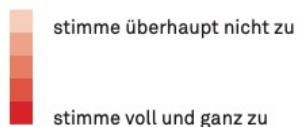


Choose a slide to present



WIE SOLLTE DAS VERHÄLTNISS ZWISCHEN WISSENSCHAFT UND BÜRGER:INNEN AUSSEHEN?

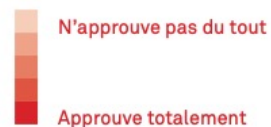
Die Mehrheit der Schweizer Bevölkerung findet, dass Wissenschaftler:innen die Öffentlichkeit über ihre Arbeit informieren sollten – allerdings stimmen weniger Menschen zu als vor der Corona-Pandemie. 39% würden gern in wissenschaftlichen Projekten mitforschen, 25% möchten mitentscheiden, zu welchen Themen geforscht wird. Im Leben von 42% der Schweizer:innen spielen Wissenschaft und Forschung eine wichtige Rolle.



Basis: 1045 – 1052 Befragte; Angaben in Prozent – Rundungsdifferenzen möglich

QUELLE RELATION LA SCIENCE DEVRAIT-ELLE ENTRETENIR AVEC LES CITOYENNES ET LES CITOYENS ?

La majorité de la population suisse estime que les chercheurs devraient informer le public de leurs travaux. Toutefois, moins de personnes sont d'accord sur ce sujet qu'avant la pandémie de coronavirus. 39% souhaiteraient participer à des projets scientifiques, 25% aimeraient intervenir dans les décisions concernant les thèmes de recherche. La science et la recherche jouent un rôle important dans la vie de 42% des Suisses et Suissesses.



Base: 1045 – 1052 personnes interrogées; données en pourcentage – des différences d'arrondi sont possibles

Wissenschaftler sollten die Öffentlichkeit über ihre Arbeit informieren

Les scientifiques devraient informer le public de leurs activités



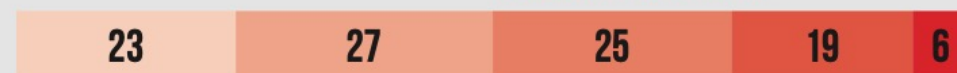
Ich würde gern einmal in wissenschaftlichen Projekten mitforschen

Je participerai une fois volontiers à des recherches sur des projets scientifiques



Leute wie ich sollten mitentscheiden, zu welchen Themen Wissenschaftler forschen

Les personnes comme moi devraient prendre part à la décision sur quels thèmes les scientifiques doivent faire des recherches



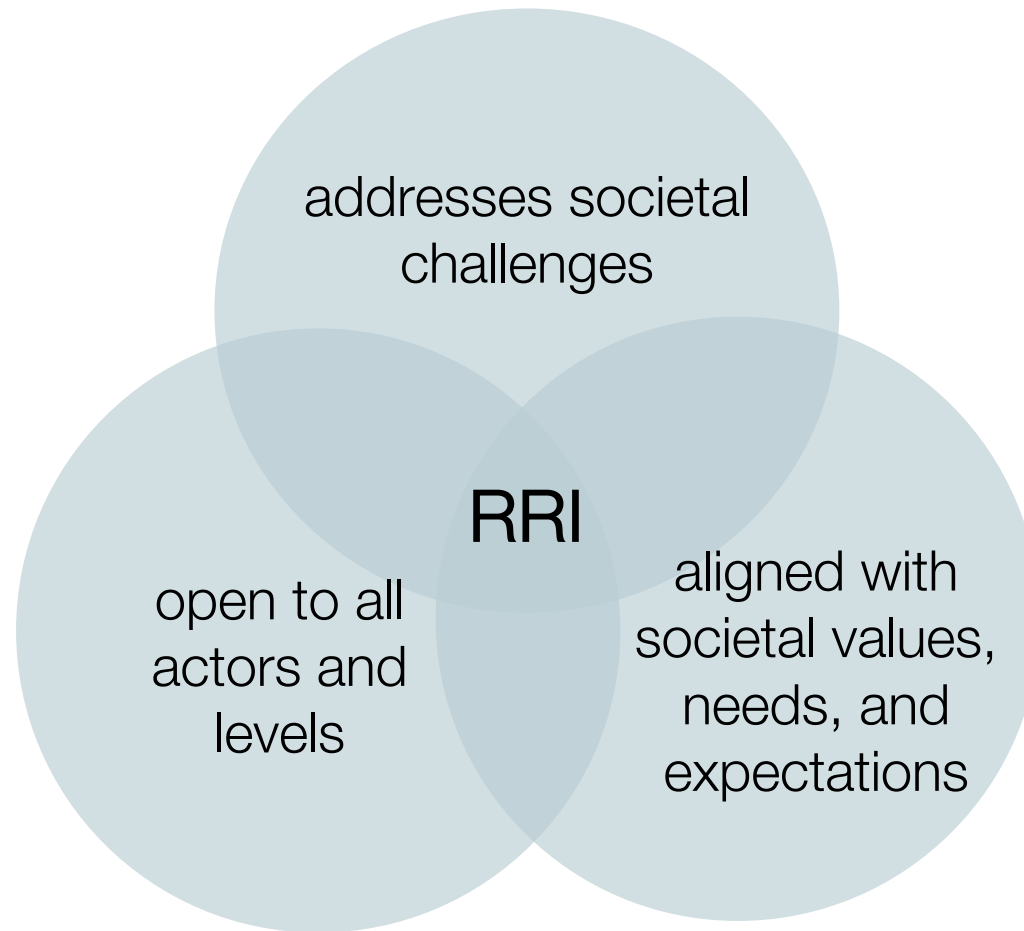
Wissenschaft und Forschung spielen in meinem Leben eine wichtige Rolle

La science et la recherche jouent un rôle important dans ma vie



Science with and for society...

Responsible Research & Innovation (RRI)



Bertemes, J. P., Haan, S., & Hans, D. (Eds.). (2024). *50 essentials on science communication*. De Gruyter.
<https://doi.org/10.1515/9783110763577>

WHEN IS SCIENCE COMMUNICATION IMPORTANT?

Identify an example and discuss why science
communication matters





Photo by [Matthew Ball](#) on [Unsplash](#)



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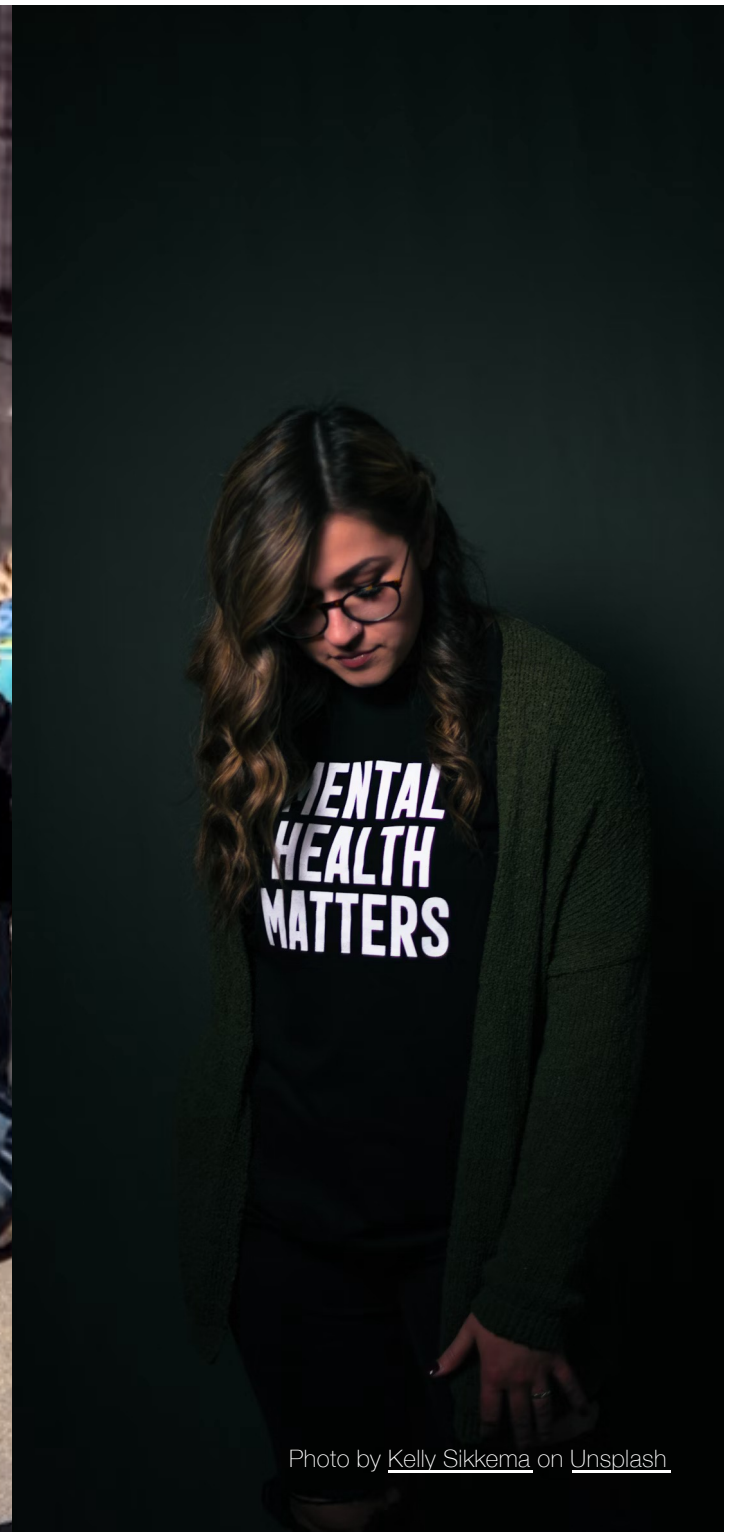


Photo by [Kelly Sikkema](#) on [Unsplash](#)

«three new studies all indicate that combined oral contraceptives (...) are associated with around a two-fold increase in the risk of thromboembolism»

U.K. Committee on Safety of Medicines, 1995

Gigerenzer G, Gaissmaier W, Kurz-Milcke E, Schwartz LM, & Woloshin S. (2007). Helping doctors and patients make sense of health statistics. *Psychological Science in the Public Interest*, 8(2):53-96.

<https://doi.org/10.1111/j.1539-6053.2008.00033.x>

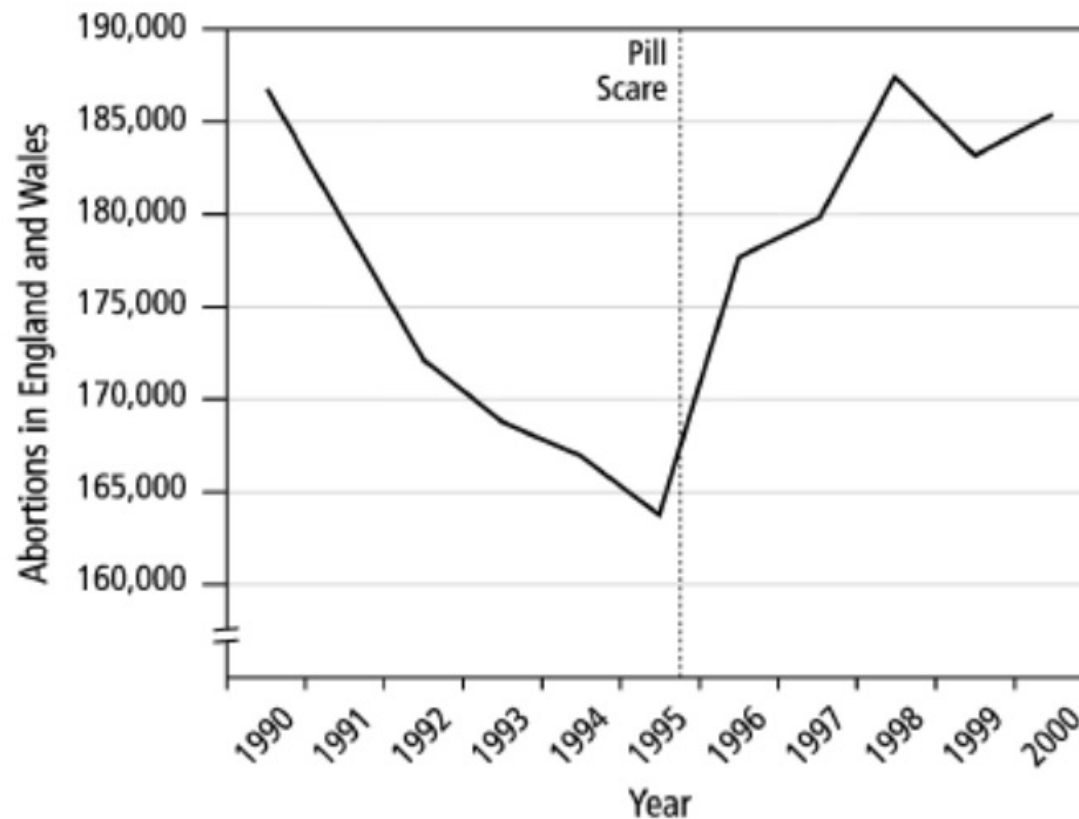


Fig. 1. Reversal of downward trend in number of abortions in England and Wales following the 1995 pill scare.

Gigerenzer G, Gaissmaier W, Kurz-Milcke E, Schwartz LM, & Woloshin S. (20027). Helping doctors and patients make sense of health statistics. *Psychological Science in the Public Interest*, 8(2):53-96.
<https://doi.org/10.1111/j.1539-6053.2008.00033.x>

What is science communication?

“We understand science communication as **all forms of communication focused on scientific knowledge or scientific work**, both inside and outside institutionalised science, including its production, content, use, and effects”

FORMS OF SCIENCE COMMUNICATION?



Some forms of science communication

Form of Science Communication	Description	Examples
Institutional Science Communication	Communication from scientific institutions or organizations to a non-scientific public.	Universities communicating research to the general public.
Science PR (Public Relations)	Interest-driven communication aimed at building reputation. Part of institutional science communication.	Universities promoting their research to enhance reputation.
Non-institutional Science Communication	Science communication by smaller associations, individuals, or teachers outside institutional settings.	Teachers or individuals sharing their passion for science.
Science Journalism	Reporting on scientific topics by journalists, distinct from institutional science communication.	News articles or reports about scientific discoveries.
Internal Science Communication (Scholarly Communication)	Exchange of scientific information within the scientific community, often during conferences or publications.	Presentations or discussions at academic conferences.
External Science Communication	Science communication aimed at audiences outside the scientific community.	Public talks or popular science books for the general public.
Science Education	Education-focused science communication, often aimed at teaching and inspiring interest in science.	School science programs, public lectures, and outreach.
Knowledge Transfer	Communication between science and industry or societal actors, often for practical applications.	Collaborations between universities and industry.

Bertemes, J. P., Haan, S., & Hans, D. (Eds.). (2024). *50 essentials on science communication*. De Gruyter.
<https://doi.org/10.1515/9783110763577>

GOALS OF SCIENCE COMMUNICATION?



Goals of science communication

Goals of Science Communication	Description	Examples
Disseminating Information	To inform the public about research activities and findings, fulfilling an ethical obligation.	Researchers sharing findings through public talks or papers.
Building Trust in Science	To enhance the credibility and trustworthiness of researchers and institutions by being visible and transparent.	Open access publications, public outreach by universities.
Preventing Misinformation	To ensure that public discourse is based on academic reality rather than individual beliefs or misinformation.	Clear communication on topics like climate change or vaccines.
Encouraging Critical Thinking	To help the public understand that uncertainty and controversy are natural parts of the scientific process.	Engaging in dialogue about scientific ambiguity and debates.
Supporting Informed Public Decision-Making	To provide the public with accurate information, allowing for informed, democratic decisions on scientific issues.	Public debates or campaigns around science-related policies.
Engaging in Public Dialogue	To create a two-way communication where scientists also consider societal needs and interests in their research.	Public forums or discussions where scientists and public interact.
Creating a Competitive Edge	To differentiate institutions or researchers by showcasing scientific achievements, though potentially controversial.	Researchers or universities promoting breakthroughs to attract funding.

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<https://doi.org/10.1515/9783110763577>

What is science communication?

SCIENCE COMMUNICATION (SciCom) may be defined as the use of appropriate skills, media, activities, and dialogue to produce one or more of the following personal responses to science (the vowel analogy)

Awareness, including familiarity with new aspects of science

Enjoyment or other affective responses, e.g. appreciating science as entertainment or art

Interest, as evidenced by voluntary involvement with science or its communication

Opinions, the forming, reforming, or confirming of science-related attitudes

Understanding of science, its content, processes, and social factors

Science communication may involve science practitioners, mediators, and other members of the general public, either peer-to-peer or between groups.

Figure 1. The AEIOU definition of science communication. This definition clarifies the purpose and characteristics of science communication and provides a basis for evaluating its effectiveness

Burns, T. W., O'Connor, D. J., & Stocklmayer, S. M. (2003). Science communication: A contemporary definition. *Public Understanding of Science*, 12(2), 183–202. <https://doi.org/10.1177/09636625030122004>

Summary

- **Responsible Research & Innovation:** aspirational, collaborative approach to R&I that addresses societal challenges, involves all actors at various levels, and aligns with societal values, needs, and expectations.
- **Science communication:** all forms of communication focused on scientific knowledge or scientific work; the use of various skills, media, and activities to engage diverse audiences in science, fostering Awareness, Enjoyment, Interest, Opinions, and Understanding of science through dialogue and interaction of multiple actors (AEIOU mnemonic).
- **Science communication entails multiple forms and goals:** ranging from institutional (e.g., universities) and non-institutional efforts (e.g., small associations, individuals), science journalism, among others, emphasizing the diversity of approaches used to engage different audiences in science-related content; each form can serve different goals, such as dissemination and knowledge transfer, but also critical thinking (because scientific results are not always clear cut), or reputation building (which can pose challenges to unbiased, truthful communication).

Course structure

Session information

Sessions take place Thursdays, 8.15-9.45, Biozentrum, Hörsaal U1.131.

#	Date	Topic	Instructor(s)	Slides	Exercise
1	18.09.2025	What is science communication?	Mata		
2	25.09.2025	Models and elements of science communication	Mata		
3	09.10.2025	Scientific uncertainty and trust in science	Mata		
4	16.10.2025	Guidelines for science communication	Mata		
5	23.10.2025	Science communication gone wrong	Mata		
6	30.10.2025	Why do we visualize?	Hil/Lachenmeier		A
7	06.11.2025	Structured content	Hil/Lachenmeier		
8	13.11.2025	Content dimensions and categorization	Hil/Lachenmeier		B
9	20.11.2025	Networks and relationships	Hil/Lachenmeier		C
10	27.11.2025	The identity of a dot	Hil/Lachenmeier		D
11	04.12.2025	Visual language and cultural context	Hil/Lachenmeier		E
12	11.12.2025	Areas and hierarchies	Hil/Lachenmeier		
13	18.12.2025	<u>Exam</u>			

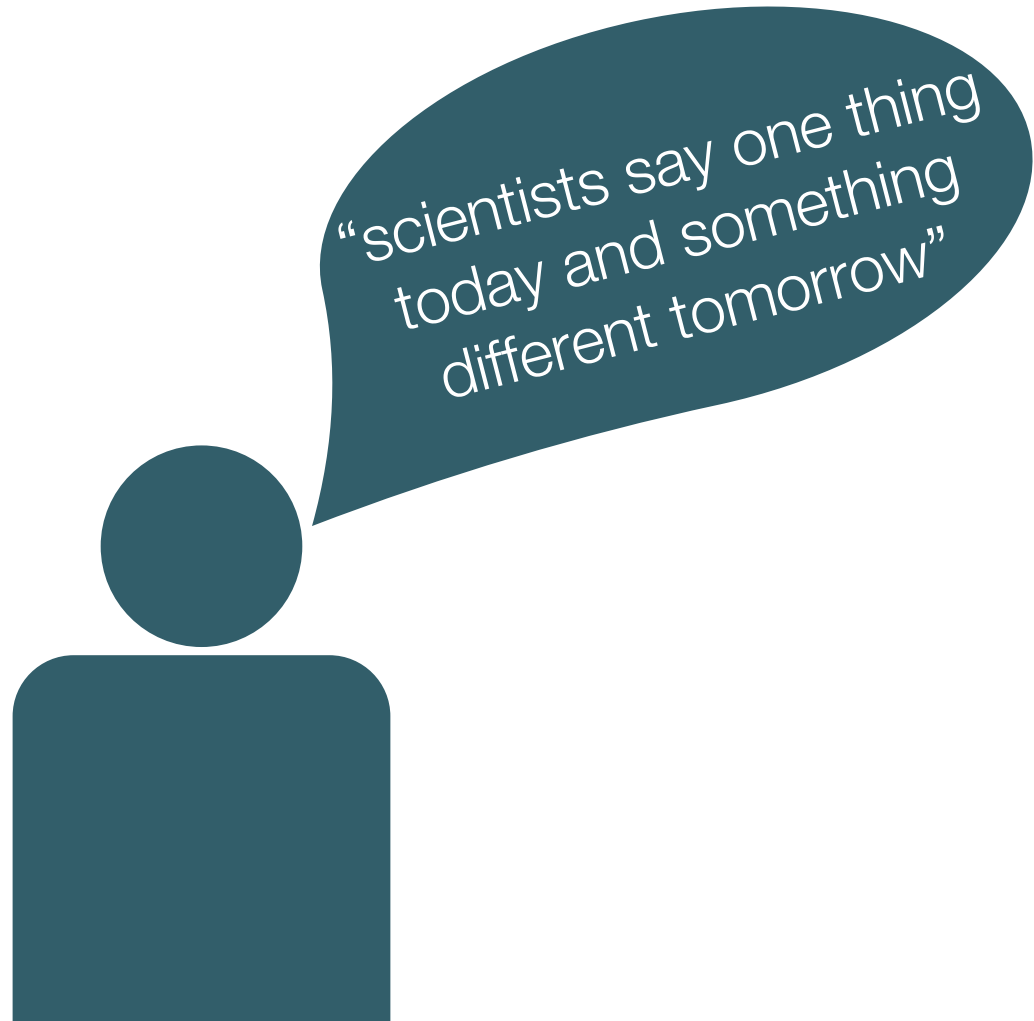
https://matarui.github.io/SCICOM_HS25/

Models and elements of science communication

Lasswell model of communication



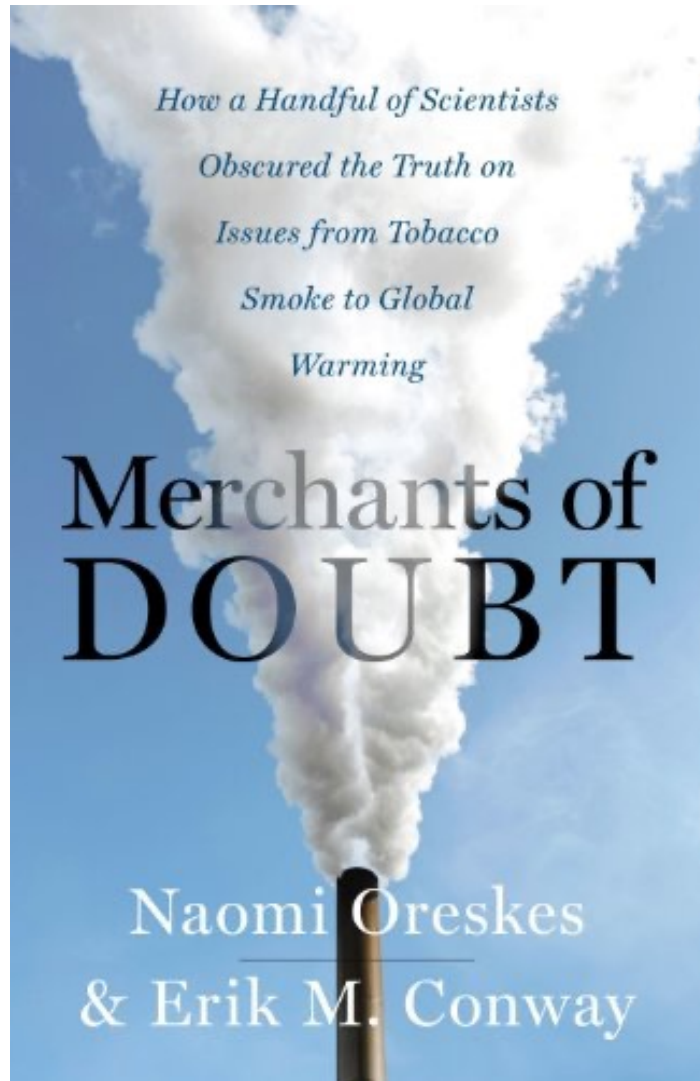
Scientific uncertainty and trust in science



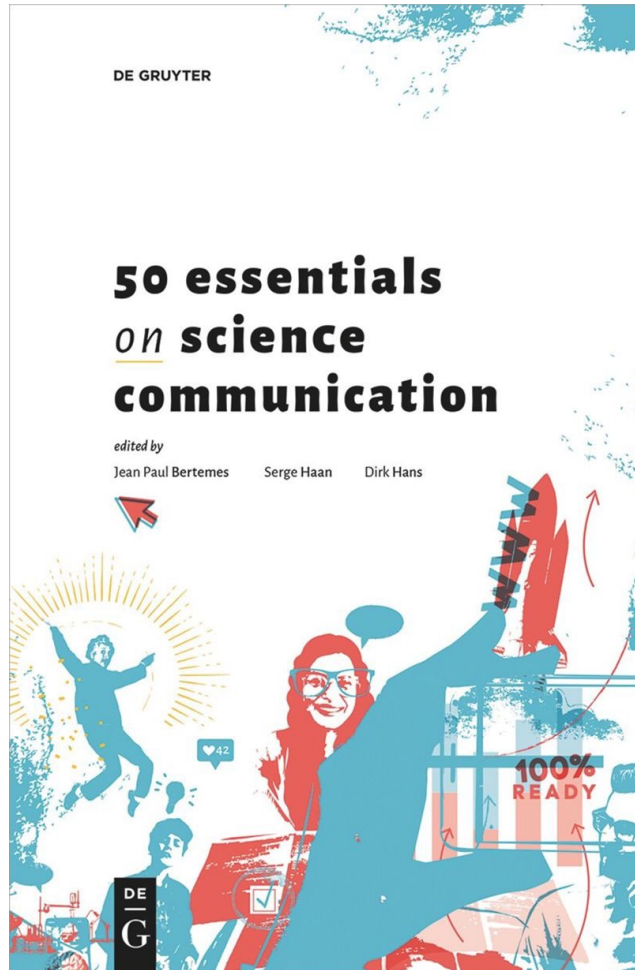
Guidelines for scientific communication



Science communication gone wrong



Course readings



Grading

The final grade for the course will be based on two components:

- **Exam (55%):** At the end of the semester, a multiple-choice exam will test your understanding of core concepts covered in lectures and readings.
- **Assignments (45%):** A portion of the grade will come from practical assignments, which involve applying the principles learned to specific applications. Both timely submission and the quality of work will be key factors in determining PASS/FAIL for each assignment. Assignments should be submitted via ADAM by the designated deadlines. More information will be available on the course website/ADAM.

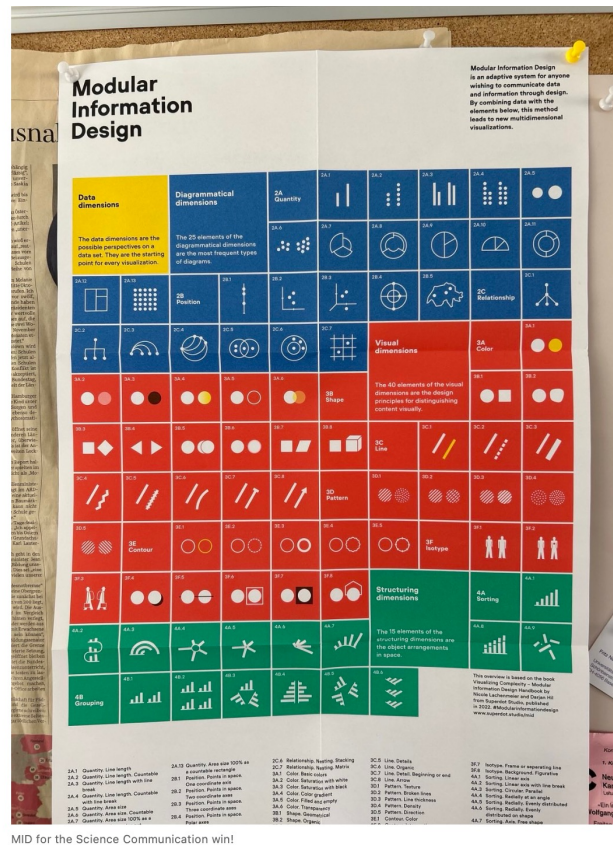
Course website

Science Communication

Science Communication ([73168-01](#)), HS25, University of Basel

Instructors: [Darjan Hil](#), [Nicole Lachenmeier](#), and [Rui Mata](#)

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https://matarui.github.io/SCICOM_HS25/