

# SCIENCE OF SCIENCE COMMUNICATION

Prof. Dan Kahan

Spring 2017

**1. Overview.** The most effective way to communicate the nature of this course is to identify its motivation. We live in a place and at a time in which we have ready access to information—scientific information—of unprecedented value to our individual and collective welfare. But the proportion of this information that is effectively used—by individuals and by society—is shockingly small. The evidence for this conclusion is reflected in the manifestly awful decisions people make, and outcomes they suffer as a result, in their personal health and financial planning. It is reflected too not only in the failure of governmental institutions to utilize the best available scientific evidence that bears on the safety, security, and prosperity of its members, but in the inability of citizens and their representatives even to agree on what that evidence is or what it signifies for the policy tradeoffs acting on it necessarily entails.

This course is about remedying this state of affairs. Its premise is that the effective transmission of consequential scientific knowledge to deliberating individuals and groups is itself a matter that admits of, and indeed demands, scientific study. The use of empirical methods is necessary to generate an understanding of the social and psychological dynamics that govern how people (members of the public, but experts too) come to know what is known to science. Such methods are also necessary to comprehend the social and political dynamics that determine whether the best evidence we have on how to communicate science becomes integrated into how we do science and how we make decisions, individual and collective, that are or should be informed by science.

Likely you get this already: but this course is not simply about how scientists can avoid speaking in jargony language when addressing the public or how journalists can communicate technical matters in comprehensible ways without mangling the facts. Those are only two of many science communication” problems, and as important as they are, they are likely not the ones in most urgent need of study (I myself think science journalists have their craft well in hand, but we’ll get to this in time). Indeed, in addition to dispelling (assaulting) the fallacy that science communication is not a matter that requires its own science, this course will self-consciously attack the notion that the sort of scientific insight necessary to guide science communication is unitary, or uniform across contexts—as if the same techniques that might help a modestly numerate individual understand the probabilistic elements of a decision to undergo a risky medical procedure were exactly the same ones needed to dispel polarization over climate science! We will try to individuate the separate domains in which a science of science communication is needed, and take stock of what is known, and what isn’t but needs to be, in each.

The primary aim of the course comprises these matters; a secondary aim is to acquire a facility with the empirical methods on which the science of science communication depends. You will not have to do empirical analyses of any particular sort in this class. But you will have to make sense of many kinds. No matter what your primary area of study is—even if it is one that doesn’t involve empirical methods—you can do this. If you don’t yet understand that, then perhaps that is the most important thing you will learn in the course. Accordingly, while we will not approach study of empirical methods in a methodical way, we will always engage critically the sorts of methods that are being used in the studies we examine, and I from time to time will supplement readings with more general ones relating to methods. Mainly, though, I will try to enable you to see (by seeing yourself and others doing it) that apprehending the significance of empirical work depends on recognizing when and how inferences can be drawn from observation:

if you know that, you can learn whatever more is necessary to appreciate how particular empirical methods contribute to insight; if you don't know that, nothing you understand about methods will furnish you with reliable guidance (just watch how much foolishness empirical methods separated from reflective, grounded inference can involve).

**2. Class Sessions & Readings.** At each session, we will discuss a collection of related readings. The assigned materials—the readings and usually a set of general questions relating to them—will be posted on the course intranet site at least one week in advance of each session. Readings will be uploaded to the intranet site in periodic installments.

**3. Reaction Papers.** Each week (with the exception of the first) students will be responsible for writing “reaction papers.” The papers should be short—as few as 4 paragraphs, no more than 12. They should present a single idea or argument inspired by the readings. It's perfectly fine for the idea or argument to be responsive to one of the general questions posed in connection with the readings, although it needn't. It's also fine for the paper to engage an issue suggested by only a single assigned reading, or an issue collateral to the main thrust of the readings collectively. Papers should *not* merely summarize the readings or any portion of them. **Papers must be posted to the designated section of the course intranet site at least 24 hours in advance of class,** and students are encouraged to read or at least skim all of them (the instructors will read them closely in advance of class).

**4. Final project.** Each student will be required to complete a “final project” in the form of a *study proposal*. The proposal (approximately 15 pp. in length) will identify a “science communication problem” and describe a plan for using appropriate empirical methods to generate information that contributes to solving it. I will furnish more information on this requirement in due course. I will also schedule meetings to discuss proposals for your “proposal,” and to give you feedback and guidance as you progress in development of them.

**5. Grading.** Grades will be based on (1) class participation and reaction papers (50%) and (2) the final project (50%).

**6. Provisional Topic List.** A provisional list of topics is attached. Some topics will involve only one session but most will involve multiple ones.

### **Provisional Topics**

1. An introductory case study: the HPV vaccine (session 1)
2. The “science communication environment” (sessions 2-3)
3. Public health & risk communication (sessions 4-5)
4. Democratic decisionmaking (session 6-8)
5. Education (session 9)
6. Communicating probabilistic information (session 10)
7. Professional decisionmaking (sessions 11-12)
8. Science journalism (session 13)
9. Popular science communication (session 14)