# IIT Mandi
# Proposal for a New Course

**Course number** : HS 548
**Course Name** : Science and Society
**Credit Distribution** : 3-0-0-3
**Intended for** : Ph.D., Masters, Advanced B.Tech. students
**Prerequisite** : None
**Mutual Exclusion** : None

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## 1. Preamble:

This course is aimed at helping students develop a critical understanding of deeply entrenched notions about science, objectivity, truth, representation etc., and arrive at a deeper and more situated understanding of science as a social activity. Located broadly within the disciplines of Science and Technology Studies and Sociology of Science, the course also touches upon key philosophical as well as policy-oriented concerns to explore whether and how science is informed by socio-cultural values. Further, it also encourages students to question the taken for granted demarcations between Science, Society and Nature, to see their interlinkages and the assemblages they constitute, such that their separate and fixed identities are revealed as more fabricated than real. Students will be exposed to classic texts in the tradition of sociologically inclined studies of science, which include some pathbreaking ethnographic studies of scientific practices as well. This will give them a wealth of insights into the making of science, which is bound to unsettle the assumptions which arise when we take science as a finished product. Reading and discussing major texts on science and its relationship with politics and statist imaginaries, students will also be learning to debate science in so far as it has a bearing on questions related to policy, law and governance. With an exposure to the ways in which epistemic values are intertwined with social, cultural, moral, political, and religious values students will be able to develop a more reflexive viewpoint on the disciplines in which they are trained or undergoing their training in, to become more aware of the disciplinary assumptions which govern the production and consumption of knowledge. The course is addressed to students from different disciplines, and is designed such that it engages with

diverse traditions of scientific knowledge in sociologically, historically and philosophically nuanced ways.

## 2. Course Modules with quantitative lecture hours:

**Unit 1: Science, Values and the Social: (12 hours)**

- What is Science?
- The 'Epistemic', the 'Cognitive', and the 'Social' in Science
- Is Science Value-Free?
- The Normative Structure of Science
- Normal Science and the Structure of Scientific Revolutions
- Scientific Objectivity

**Unit 2: Construction of Facts (10 hours)**

- Construction of Scientific Facts
- 'Social' *in* 'Science' *and* 'Science' *in* 'Social' or the Mutual Constitution of Science and Society
- Scientific Objects
- Truth and Representation in the Sciences
- Circulating Reference: 'Context' and 'Content' of Science

**Unit 3 Practices of Science (10 hours)**

- Scientific Practices
- Epistemic Cultures
- Science as a Vocation, Technical Life, and the Scientist as an Individual
- Social Epistemology of Experiments
- (En)gendered Science

**Unit 4 Science, Democracy and Governance (10 hours)**

- Expertise and Science
- Politics of Science: Science as Ideology
- Infrastructural Imaginaries
- Debating Science Policies
- Science and Citizens

**Laboratory/practical/tutorial Modules: NA**

## 3. Text books:

1. **Machamer, P and Wolters, G (Eds.). 2004. *Science, Values, and Objectivity*. Pittsburgh: University of Pittsburgh.**
2. **Sismondo, Sergio. 2004. *An Introduction to Science and Technology Studies*. Malden, USA. Blackwell Publishing Ltd.**

## 4. References:


1. Biagioli, M (Ed.). 1999. *The Science Studies Reader*. New York, NY: Routledge.
2. Daston, L (Ed.). 2000. *Biographies of Scientific Objects*. Chicago: University of Chicago Press.
3. Daston L, Galison P. 1992. 'The Image of Objectivity'. *Representations* 40 (special issue): 81-128.
4. Douglas, H. 2009. *Science, Policy, and the Value-free Ideal*. Pittsburgh: University of Pittsburgh.
5. Fleck, L. 1979. *Genesis and Development of a Scientific Fact*. Chicago: The University of Chicago Press.
6. Galison, P. 1987. *How Experiments End*. Chicago: The University of Chicago Press.
7. Golinski, Jan. 1998. *Making Natural Knowledge: Constructivism and the History of Science*. Cambridge, UK: Cambridge University Press.
8. Hess, D. 1997. *Science Studies: An Advanced Introduction*. New York: New York University Press.
9. Jasanoff, S (Ed.). 2004. *States of Knowledge: The Co-Production of Science and Social Order*. London: Routledge.
10. Kuhn, T.S. 2012. *The Structure of Scientific Revolution*. Chicago: University of Chicago Press.
11. Knorr Cetina, K. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge, Massachusetts: Harvard university Press.
12. Latour, B. and Woolgar, S. 1986. *Laboratory Life: The Construction of Scientific Facts*. Princeton, New Jersey. Princeton University Press.
13. Latour, B. 1999. Pandora's Hope: Essays on the Reality of Science Studies. Cambridge: Harvard University Press.
14. Leach, M, I. Scoones, and B. Wynne (Eds.). 2005. *Science and Citizens: Globalization and the Challenge of Engagement*. London: Zed Books.
15. Lewontin, R. 1992. *Biology as Ideology: The Doctrine of DNA*. New York: Harper Perennial.
16. Merton, R, N. Storer. 1973. *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago: The University of Chicago Press.
17. Mitchell, T. 2002. *Rule of Experts: Egypt, Techno-politics, Modernity*. Berkeley: University of California Press.
18. Porter, T.M. 2020. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton, New Jersey: Princeton University Press.
19. Sarukkai, S. 2005. 'Revisiting the 'Unreasonable Effectiveness' of Mathematics'. Current Science, Vol. 88(3): 415-423.
20. Sarukkai, S. 2012. *What is Science?* New Delhi: National Book Trust, India.

*21.* Shapin, S and Schaffer, S. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press.
*22.* Sukumar, AM. 2019. *Midnight's Machines: A Political History of Technology in India.* New York: Penguin Random House.
*23.* Weber, M. 1946. 'Science as a Vocation'. In Gerth HH and C Wright Mills (Eds.). From Max Weber: Essays in Sociology. New York: Oxford University Press, 129-156.

## 5. Similarity with the existing courses:

**(Similarity content is declared as per the number of lecture hours on similar topics)**

| S. No. | | Course Code | Similarity Content | Approx. % of Content |
|---|---|---|---|---|
| 1. | Science, Technology and Society | HS353 | One subtopic in module 1: 'Structure of Scientific Revolutions'. | < 5% |

**6. Justification of new course proposal if cumulative similarity content is >30%:**