

2. Husserl's Theory

Essential/Recommended Reading

Chattopadhyaya, D.P., Embree, Mohanty (ed) (1992). *Phenomenology and Indian Philosophy*. Indian Council of Philosophical Research, New Delhi in association with Motilal Banarsidass Publishers Private Limited, ISBN: 81-208-0770-7, Chapter 1, p.8-19.

Zahavi, Dan.(2003) *Husserl's Phenomenology*, Stanford University Press, California. Chapter-2, p. 43- 77.

Suggestive Readings:

Bhadra, Mrinal Kanti (1990). *A Critical Survey of Phenomenology and Existentialism*, Indian Council of Philosophical Research, New Delhi, ISBN: 81-7023-282-1.

Krishna, Daya. (2009).*The Nature of Philosophy*, Indian Council of Philosophical Research, New Delhi, ISBN: 978-81-89963-06-4, p. 202-228.

Keywords: *Khyātivāda* , *YathārthaKhyāti*, *SatKhyāti*, *Viśiṣṭādvaita*, *AnirvacanīyaKhyāti*, *Advaita*, Phenomenology.

PHILOSOPHY OF SCIENCE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		

Philosophy of Science	4	3	1	Nil	None	None
DSE 8						

Course Objectives:

1. The objective is to provide students with a foundational understanding of the central philosophical concepts in the philosophy of science, such as the nature of scientific knowledge, the scientific method, and the demarcation between science and non-science.
2. The objective is to help students critically analyze and evaluate the theories, assumptions, and practices that underlie scientific inquiry
3. The objective is to enhance students' ability to engage in philosophical analysis and argumentations, helping them formulate and defend positions on key debates in the philosophy of science both in written and oral formats.

Learning Outcomes

1. Students will be able to critically understand and discuss fundamental philosophical issues related to the nature of science, such as the distinction between science and pseudoscience, the role of observation and theory in scientific inquiry, and the problem of induction.
2. Students will be able to apply key philosophical theories, such as falsifiability, scientific realism, and instrumentalism, to real-world scientific examples, demonstrating how these theories inform and shape scientific practices and theories.

3. Students will be able to construct well-reasoned philosophical arguments on key debates in the philosophy of science, presenting and defending their positions through clear, logical reasoning in both written and oral forms.

UNIT I: INTRODUCTION TO PHILOSOPHY OF SCIENCE (5 Weeks / 15 Hours)

1. Science and Philosophy of Science
2. Hume: The Traditional Problem of Induction
3. The Nature of Doubt and its Relation to Science

Essential Readings:

- Ladyman, J. (2002). Introduction. In *Understanding philosophy of science*. (pp. 1-8). Routledge.
- Okasha, S. (2016). What is Science? In *Philosophy of science: A very short introduction* (2nded., pp. 1–15). Oxford University Press.
- Hume, D. (2002). David Hume, An Enquiry Concerning Human Understanding (Section IV- parts 1 & 2). In M. Huemer (Ed.), *Epistemology: Contemporary readings* (pp. 298–306). Routledge. (Originally published in 1748).
- Sarukkai S. (2005). Doubt. In *Indian Philosophy and Philosophy of Science*. (pp. 20-42). Motilal Banarsidass

Further Readings:

- Henderson, L. (2018, March 21). *The problem of induction*. Stanford Encyclopedia of Philosophy. Retrieved from <https://plato.stanford.edu/entries/induction-problem/>
- Lipton, P. (2013). Induction. In M. Curd, J. A. Cover & C. Pincock (Eds), *Philosophy of science: The central issues*. W.W. Norton & Company.

Swinburne, R. (Ed.). (1974). *The justification of induction*. Oxford University Press.

UNIT II: OBSERVATION, LAWS OF NATURE AND SCIENTIFIC EXPLANATION

(4 Weeks / 12 Hours)

1. Theory Ladenness of Observation
2. Two models of Scientific Explanation

Essential Readings:

- Hanson, N. R. (1958). Observation. In *Patterns of discovery: An inquiry into the conceptual foundations of Science* (pp. 4–30). C.U.P.
- Hempel, C. G. (2007). Two models of scientific explanation. In Y. Balashov & A. Rosenberg (Eds.), *Philosophy of science: Contemporary readings* (pp. 45–55). essay, Routledge.

Further Readings:

- Boyd, N. M., & Bogen, J. (2021, June 14). *Theory and observation in science*. Stanford Encyclopedia of Philosophy. Retrieved from <https://plato.stanford.edu/entries/science-theory-observation/>
- Cartwright, N. (1980). The Truth Doesn't Explain Much. *American Philosophical Quarterly* 17 (2):159—163.
- Dretske, F. I. (1977). Laws of nature. *Philosophy of Science*, 44(2), 248–268.
- Harman, G. H. (1965). The inference to the best explanation. *The Philosophical Review*, 74(1), 88–95.
- Hanson, N. R., & Toulmin, S. (1972). *Observation and explanation: A guide to philosophy of science*. George Allen & Unwin.
- Hempel, C. G. (1966). Laws and their role in scientific explanation. In *Philosophy of natural science* (pp. 237–259). Prentice-Hall.

Woodward, J., & Ross, L. (2021, May 10). *Scientific explanation*. Stanford Encyclopedia of Philosophy. Retrieved from <https://plato.stanford.edu/entries/scientific-explanation/>

UNIT III: THE METHODOLOGY OF SCIENCE AND SCIENTIFIC PROGRESS

(4 Weeks / 12 Hours)1.

Popper: The Problem of Demarcation

2. Falsificationism

3. Kuhn: Paradigm and Paradigm Change

Essential Readings:

- Popper, K. (1963). *Conjectures and Refutations*, 2nd ed., pp.33-46. Routledge.
- Popper, K. (1959). *The Logic of Scientific Discovery*, pp. 10-20, 57-73. Routledge.
- Kuhn, T. (1962). *The Structure of Scientific Revolutions* (chapters 1-2, 11- 12). Chicago University Press.

Further Readings:

Dilworth, C. (2008). *Scientific progress a study concerning the nature of the relation between successive scientific theories* (4th ed.). Springer.

Feyerabend, P. (1981). In I. Hacking (Ed.), *How to Defend Society Against Science*. In *Scientific revolutions* (pp. 156–167). Oxford University Press.

Hepburn, B., & Andersen, H. (2021, June 1). *Scientific method*. Stanford Encyclopedia of Philosophy. Retrieved from <https://plato.stanford.edu/entries/scientific-method/>

Kuhn, T. (1962). *The Structure of Scientific Revolutions*. Chicago University Press.

Lakatos, I. (1978). A Methodology of Scientific Research Programmes. In J. Worrall & G. Currie (Eds.), *The methodology of scientific research programmes: Philosophical papers* (Vol. 1, pp. 47–67). Cambridge University Press.

Niiniluoto, I. (2019, October 16). *Scientific progress*. Stanford Encyclopedia of Philosophy. Retrieved July 11, 2022, from <https://plato.stanford.edu/entries/scientific-progress>.

Nola, R., & Sankey, H. (Eds.). (2000). *After Popper, Kuhn and Feyerabend: Recent issues in theories of scientific method*. Kluwer Academic.

UNIT IV: ON SCIENTIFIC REALISM AND ANTIREALISM (2 Weeks / 6 Hours)

1. Arguments concerning scientific realism and antirealism

Essential Readings:

- van Fraassen, B. C. (1987). Arguments concerning scientific realism. In *The scientific image* (pp. 6–40). Clarendon Press. [also available in] van Fraassen, B.C. (1998). Arguments concerning scientific realism. In M. Curd and J. A. Cover (Eds.), *Philosophy of science: The central issues* (pp. 1064-1087). W. W. Norton and Company. (Originally published in 1980).

Further Readings

- Chakravartty, A. (2017, June 12). *Scientific realism*. Stanford Encyclopedia of Philosophy. Retrieved from <https://plato.stanford.edu/entries/scientific-realism/>
- Fine, A. (1991). Piecemeal realism. *Philosophical Studies*, 61(1), 79–96.
- Harman, G. H. (1965). The inference to the best explanation. *The Philosophical Review*, 74(1), 88–95.
- Ladyman, J. (1998). What is Structural Realism? *Studies in History and Philosophy of Science*, 29, 409–424.
- Lyons, T. D. (2016). Scientific realism. In P. Humphreys (ed.), *The Oxford handbook of philosophy of science* (pp. 564-584). Oxford University Press.

Additional Resources

- Boyd, R., Gasper, P., & Trout, J. D. (1999). *The Philosophy of Science*. MIT Press.
- Curd, M., Cover, J. A., & Pincock, C. (Eds.). (2013). *Philosophy of science: The central issues*. W.W. Norton & Company.
- Feynman, R. P. (2010). *The Feynman lectures on physics* (Vol. 1), pp. 52—56. Basic Books.

Godfrey-Smith, P. (2003). *Theory and reality: An introduction to the philosophy of science*. The University of Chicago Press.

Humphreys, P. (Ed.). (2016). *The Oxford Handbook of Philosophy of Science*. Oxford University Press.

Ladyman, J. (2002). *Understanding philosophy of science*. Routledge.

Machamer, P., & Silberstein, M. J. (2008). *The Blackwell Guide to the Philosophy of Science*. Blackwell Publishers.

Papineau, D. (1996). *The Philosophy of Science*. Oxford University Press.

Keywords

Induction, Problem of Induction, Observation, Explanation, Laws of nature, Demarcation, Science and pseudoscience, Falsification, Scientific Revolution, normal science, paradigm shift, incommensurability, Hume, Popper, Kuhn, realism, antirealism

Applied Ethics DSE 9

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Applied Ethics DSE 9	4	3	1	Nil	None	None