

Unit 2. Philosophies of science

Reading assignments

Date	Reading	Discussion/presentations
Tuesday, Feb. 1	Alberts; Hands I	The received view
Thursday, Feb. 3	Hands II	Attack on the received view
Tuesday, Feb. 3	Hempel; Agin	Science and values
Thursday, Feb. 10	None	Review for Exam 1

Learning objectives and assessments

1. Be familiar with philosophical models of science (Hands & Aberts).
 - a) Explain similarities and differences between deductive and inductive reasoning.
 - b) Explain relationships between the closely-related (but distinct) concepts of syllogism, logic, mathematics, *a priori* knowledge, and analytic statements.
 - c) Explain relationships between the closely-related (but distinct) concepts of empiricism, verifiability, *a posteriori* knowledge, and synthetic statements.
 - d) Critically assess how assumptions about how the world works (e.g., its adherence to logic and possession of rock-hard facts) could represent weaknesses in the logical positivist and logical empiricist representations of science.
 - e) Use differences in demarcation, the cognitive status of scientific theories, and the purpose of scientific theories, to distinguish logical positivism from logical empiricism.
 - f) Explain “instrumentalist” and “realist” views of scientific theories.
 - g) Describe the “symmetry thesis” of logical empiricism.
 - h) Define falsificationism, and explain how it challenged logical positivism more deeply than it did logical empiricism.
- a) Explain how underdetermination represents a critique of the received view.
- b) Explain how holism represents a critique of the received view.
- c) Explain how theory-ladenness represents a critique of the received view.
- d) Describe Kuhn’s theories of paradigmatic change and incommensurability.
2. Be familiar with roles of values in science (Hempel & Agin)
 - a) Distinguish given value judgments as “instrumental” vs “categorical”.
 - b) Describe how, in Hempel’s view, science can (and cannot) clarify problems of moral valuations.
 - c) Explain how “bad science” and “junk science” differ.
 - d) Compare Agin’s and Hempel’s views of the role of uncertainty in making scientific predictions.