PHIL260/360
Further Reading Suggestions

Here are some places to start if you want to see more details, or different views, about the topics we cover in class each week—these are a few suggestions, and by no means exhaustive lists. Please get in touch with me if you're interested in reading more about any of these topics, and would like some guidance on where to start or what to focus on.

Abbreviations in the lists below:

SEP: Stanford Encyclopedia of Philosophy: http://plato.stanford.edu
Companion: Routledge Companion to Philosophy of Science (online resource via UoA Library)

Week 2: What is Science? What Distingsuishes it from Pseudoscience?

- Peter Godfrey-Smith, *Theory and Reality*, Chapter 4: Popper: Conjecture and Refutation, especially pages 58 onwards (University of Chicago Press, 2003)
- Sven Ove Hanssen, "Science and Pseudoscience," *SEP*
- Philip Kitcher, *Abusing Science: The Case Against Creationism*, Chapter 2: Believing Where We Cannot Prove (MIT Press, 1982)
- Bradley Monton, "Pseudoscience", *Companion*
- Samir Okasha, *Philosophy of Science: A Very Short Introduction*, Chapter 1: What is Science? (Oxford University Press, 2002).

Week 3: Induction and Confirmation

- Vincenzo Crupi, "Confirmation", *SEP*
- Peter Godfrey-Smith, *Theory and Reality*, Chapter 14: Bayesianism and Modern Theories of Evidence (University of Chicago Press, 2003)
- Samir Okasha, *Philosophy of Science: A Very Short Introduction*, Chapter 2: Scientific Reasoning (Oxford University Press, 2002)
- John Vickers, "The Problem of Induction", *SEP*

Week 4: Scientific Explanation

- Yemima Ben-Menahem, "The Inference to the Best Explanation," *Erkenntnis*, 33, 319–344 (1990)
- Peter Godfrey-Smith, *Theory and Reality*, Chapter 13: Explanation (University of Chicago Press, 2003)
- Angela Potochnik, "Levels of Explanation Reconceived," *Philosophy of Science*, 77, 59–72 (2010)
- James Woodward, "Explanation", *Companion*

Week 6: Laws of Nature

- John W. Carroll, "Laws of Nature", *SEP*
- Nancy Cartwright, *How the Laws of Physics Lie* (Clarendon Press, 1983)
- Mark Lange, "Laws of Nature", *Companion*

Week 7: Modelling and Computer Simulation

- Roman Frigg and Stephan Hartmann, "Models in Science", *SEP*
- Mary Hesse, *Models and Analogies in Science* (Notre Dame University Press, 1966)
- James Ladyman, "Idealization", *Companion*
- Mary Morgan and Margaret Morrison, *Models as Mediators: Perspectives on Natural and Social Science* (Cambridge University Press, 1999)
- Demetris Portides, "Models", *Companion*

- Eric Winsberg, "Computer Simulations in Science", *SEP*

Week 8: Experiments

- Theodore Arabatzis, "Experiment", *Companion*
- Allan Franklin and Slobodan Perovic, "Experiment in Physics", *SEP*
- Mary Morgan, "Experiments and Models: New Phenomena, Inference, and Surprise", *Journal of Economic Methodology*, 12, 317–329 (2005)
- Wendy Parker, "Does Matter Really Matter? Computer Simulations, Experiments, and Materiality," *Synthese*, 169, 483–496 (2009)
- Hans Radder (Ed.), *Philosophy of Scientific Experimentation* (University of Pittsburgh Press, 2003)
- Marcel Weber, "Experiment in Biology", *SEP*

Week 9: Hypothesis Testing Versus Exploration

- Kevin Elliott, "Varieties of Exploratory Experimentation in Nanotoxicology," *History and Philosophy of the Life Sciences*, 29, (2007)
- Chris Haufe, "Why do Funding Agencies Favor Hypothesis Testing?" *Studies in History and Philosophy of Science*, 44, 363–374 (2013)
- Maureen O'Malley, "Exploratory Experimentation and Scientific Practice: Metagenomics and the Proteorhodopsin Case", *History and Philosophy of the Life Sciences*, 29, 335-358 (2007)
- Howard Sankey, "Scientific Method", *Companion*
- Friedrich Steinle, "Entering New Fields: Exploratory Uses of Experimentation", *Philosophy of Science*, 64, S65–S74 (1997)

Week 10: Revolutions, Realism, and Pessimism

- Anjan Chakravartty, "Scientific Realism", *SEP*
- Lindley Darden, "Reasoning in Scientific Change: Charles Darwin, Hugo de Vries, and the Discovery of Segregation," *Studies in History and Philosophy of Science*, 7, 127–169 (1976)
- Michael Devitt, "Realism/Anti-Realism", *Companion*
- Peter Godfrey-Smith, *Theory and Reality*, Chapter 6: Kuhn and Revolutions and Chapter 12: Scientific Realism (University of Chicago Press, 2003)
- Ian Hacking, *Representing and Intervening*, especially Chapter 1: What is Scientific Realism? and Chapter 16: Experimentation and Scientific Realism (Cambridge University Press, 1983)
- Samir Okasha, *Philosophy of Science: A Very Short Introduction*, Chapter 4: Realism and Anti-Realism (Oxford University Press, 2002)
- Miriam Solomon, "Multivariate Models of Scientific Change," *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association*, 2, 287–297 (1994)
- James Worrall, "Theory Change in Science", *Companion*

Week 11: Objectivity and Values

- Heather Douglas, "Inductive Risk and Values in Science," *Philosophy of Science*, 67, 559–579 (2000)
- Gerald Doppelt, "Values in Science", *Companion*
- Kathleen Okruhlik, "Gender and the Biological Sciences," *Canadian Journal of Philosophy*, 24, 21–42 (1994)
- Julian Reiss and Jan Sprenger, "Scientific Objectivity", *SEP*

Week 12: Public Understanding and Communication of Science

- Thomas Dietz, "Bringing Values and Deliberation to Science Communication", *Proceedings of the National Academy of Sciences*, 110, 14081–14087 (2013)
- Kevin Elliott and David Resnik, "Science, Policy, and the Transparency of Values," *Environmental Health Perspectives*, 122, 647–650 (2014)
- Dan Kahan et al., "The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks," *Nature Climate Change*, 27 May 2012
- Tania Lombrozo, Andrew Shtulman, & Michael Weisberg, "The Intelligent Design Controversy: Lessons from Psychology and Education," *Trends in Cognitive Sciences*, 10, 56–57 (2006)
- Spencer Weart, *The Discovery of Global Warming*, http://www.aip.org/history/climate/index.htm#contents (2008)
- James Woodward and David Goodstein, "Conduct, Misconduct, and the Structure of Science"

Some discussions focused on Aotearoa New Zealand:

- Douglas James Ashwell, "The Challenges of Science Journalism: The Perspectives of Scientists, Science Communication Advisors and Journalists from New Zealand," *Public Understanding of Science*, 25(3), 379–393 (2016)
- Allan Bell, "Media (Mis)Communication on the Science of Climate Change," *Public Understanding of Science*, 3(3), 259–275 (1994)
- Priya Kurian and Jeanette Wright, "Science, Governance, and Public Participation: An Analysis of Decision Making on Genetic Modification in Aotearoa/New Zealand," *Public Understanding of Science*, 21(4), 447–464 (2010)
- Debashish Munshi et al., "Redesigning the Architecture of Policy-Making: Engaging with Māori on Nanotechnology in New Zealand", *Public Understanding of Science*, 25(3), 287–302 (2016)