BMEGT41A002
Budapest University of Technology and Economics
Department of Philosophy and History of Science

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Introduction to Research Methodology

Outline of the course:

The undergraduate course offers a basic introduction to long-standing issues concerning scientific knowledge and methodology. It examines case studies taken from realistic scenarios and surveys a variety of topics from standard philosophy of science. The course discusses issues from the point of view of empirical research in various fields as well as from the point of view of epistemology and philosophy. The topics covered give an introduction to core concepts and connect recent contributions that explore contemporary approaches (e.g. recent advances in the philosophy of measurement and modelling). Apart from familiarizing the student with the established theories and key concepts in philosophy of science and methodology, the course also examines the mechanisms that underlie scientific creativity and discusses the ethical responsibilities of scientists and engineers.

Assessment

Mid term and End term tests.

Either of the test can be retaken at the end of the semester. However, one of the tests during the semester has to be above 60% in order to do this.

Reading:

There is only one mandatory course book, still it is recommended that students familiarize themselves with some of the suggested readings.

Mandatory Reading:

Rosenberg, A. (2012). *Philosophy of Science: A Contemporary Introduction* (3 edition). New York: Routledge.

Suggested Readings:

Chakravartty, Anjan, "Scientific Realism", *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/spr2014/entries/scientific-realism/>.

Hacking, I. (1983). *Representing and Intervening: Introductory Topics in the Philosophy of Natural Science*. Cambridge; New York: Cambridge University Press.

Losee, J. (2001). *A Historical Introduction to the Philosophy of Science, 4th Edition* (4th edition). Oxford England ; New York: Oxford University Press.

Woodward, James, "Scientific Explanation", *The Stanford Encyclopedia of Philosophy* (Winter 2014 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/win2014/entries/scientific-explanation/>.

Topics Covered

7th September	1 Philosophy and Science
14th September	2 Why Is Philosophy of Science Important?
21st September	3 Scientific Explanation
28th September	4 Why Do Laws Explain?
5th October	5 Causation, Inexact Laws and Statistical Probabilities
12th October	10 Induction and Probability
19th October	TEST
26th October	7 The Structure of Scientific Theories
2nd November	9 Theory Construction vs. Model Building
9th November	8 Epistemic and Metaphysical Issues About Scientific Theories
16th November	11 Confirmation, Falsification, Underdetermination
23rd November	12 Challenges from the History of Science
30th November	15 Science, Relativism and Objectivity
7th December	FINAL TEST