Philosophy of Probability

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This course is an introduction to philosophical issues connected with probability. The main text will be the instructor's book manuscript, *Beyond Chance and Credence*, which will be available on the course OWL site. This will be supplemented by classic works on the philosophy of probability.

The course material will begin with an overview of the discussions (which still have relevance for present-day discussions) about the meaning of probability statements that took place among the founders of the subject, in the 18th and 19th centuries. The emphasis there will be on two senses of "probability": an epistemic sense, having to do with degrees of belief (*credence*, in philosophical parlance), and an objective sense, thought to be a feature of "chance set-ups" such as games of chance (*chance*). Attempts to base probability on a Principle of Indifference and on frequencies will be discussed, along with the limitations of such approaches. We will then move on to the use of probability in physics, particularly in statistical mechanics.

The main theme of the book is that what is needed to do justice to the use of probabilities in physics is a concept that goes beyond the familiar dichotomy of chance and credence; the concept required to do justice to our use of probability is one that is neither wholly objective nor wholly epistemic, but combines elements of both.

The book is intended to be self-contained; no background in probability theory or in physics will be presupposed. Students must, however, be prepared to learn the relevant bits of probability theory and of physics. Elementary formal logic (propositional logic, first-order predicate calculus) *will* be assumed.

Required texts:
Beyond Chance and Credence. This will be available in pdf format on the course OWL site.

Recommended texts:
Antony Eagle, ed., *Philosophy of Probability: Contemporary Readings* (Routledge, 2011).
Alan Hájek and Christopher Hitchcock, eds., *Oxford Handbook of Philosophy and Probability* (Oxford University Press, 2016).

Requirements:

1. Regular attendance and active participation in class discussions.
2. Presentation(s) based on some portion of assigned reading material.
3. Problem sets, assigned sporadically
4. Term paper draft, plus presentation on term paper topic.
5. Term paper
6. Take-home exam

Evaluation:

Presentation(s)	10 %
Problem sets	5 %
Take-home exam	10 %
Term paper draft	5 %
Term paper	70 %