Chance and Uncertainty

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PH3243, online course
Mon 9am, Fall 2021
Office hours: Tues 8pm and by appt.

Course Description

What is the relationship between chance and uncertainty? If a fair coin is about to be flipped, how certain should I be that any particular outcome will obtain? What mathematical theories can be used to formalize chance and uncertainty? What sorts of things are chances and credences, anyway? And how can we use chance and credence to make our way in an uncertain world?

In this course, students will learn some accounts of chance and 'credence'—the technical philosophical term for uncertainty—which address these questions. We will begin with three weeks on the basics of probability theory, since both chance and credence are often formalized in terms of probabilities. Then we will discuss the metaphysics of chances and credences; that is, we will explore some theories of what chances and credences are. After that, we will explore some theories of which credences are rational, and how rational credence might relate to chance. Finally, we will explore a few more theories of how people can use credences, and chances, to help them navigate the world.

Course Requirements

1. Participation (50 points).
   - Students are expected to ask questions, attend all lectures, and occasionally work together in small groups.
   - Each student is required to attend office hours at least once. Email me if you are busy during my scheduled office hours, and we will find a different time to meet.
   - See the course website for the rubric which I use to grade participation.
2. Two homeworks (75 points each).
   - Students will be required to complete two homeworks.
   - Each homework must be submitted by the date and time on the schedule below.
   - Late homework will generally not be accepted.
3. Midterm (100 points).
   - Date: Aug 30.
   - The midterm will cover the material on propositional logic.
4. Final paper, two drafts (100 points each).
   - Due dates: Oct 18 at 11:59pm (first draft), Nov 8 at 11:59pm (final draft).
   - Must be in the range 2000-3000 words.

- Closer to the due date, a detailed description of this assignment will be posted to the course websites.

For information about various course policies—for instance, the late assignment policy, the grade appeals policy, and the make-up work policy—see the course websites.

1. LumiNUS website: https://luminus.nus.edu.sg/modules/ab302f8a-df41-45d9-abcf-65118f8881c9
2. My course website: isaacwilhelm.com/teaching.htm (click on "Chance and Uncertainty" link)

Learning outcomes

By this course's conclusion, you should be able to
- solve basic problems concerning probability,
- distinguish chance from credence,
- explain standard views about what chances and credences are, and how they relate,
- write clear, coherent papers that argue for a particular thesis, and
- discuss complex philosophical ideas respectfully.

Plagiarism and Academic Integrity

Please adhere to the NUS policies on plagiarism and academic integrity. Penalties for violations of these policies can be severe: they include an automatic failing grade for the course, and possibly worse. A comprehensive overview of these policies can be found at https://www.nus.edu.sg/celc/programmes/plagiarism.html.

Accessibility

This class should be a great, fun, and educational experience for everyone. And of course, everyone deserves equal access to all educational opportunities at NUS. Those with disabilities are encouraged to speak with me if that would be helpful, and to avail themselves of the services provided by the Disability Support Office: https://nus.edu.sg/osa/student-services/disability-support.

Schedule

The readings will be drawn from several sources: handouts that I have written, selections from textbooks, articles, and online encyclopedias. All readings are required. And they are posted on the course's LumiNUS website.

In the schedule below, I list the requirements and readings for each week. For the requirements, I list the due dates. Bolded text indicates something which you will need to

submit for a grade: a homework, a midterm, or a draft of the final paper. Note that the readings, for any given week, should be completed before the lecture in that week.

Week 1: Introduction to Chance, Belief, Credence, and Probability

Requirements
- Lecture: Aug 16.

Readings
- Handout: propositional logic.

Week 2: Probability Theory

Requirements
- Lecture: Aug 23.
- **Homework 1 due: Aug 26, 11:59pm.**

Readings
- "The Probability Calculus," pp. 109-117 (Skyrms).
- "Elementary Probability Ideas" (Hacking).

Week 3: Probability Theory

Requirements
- Lecture: Aug 30.
- **Midterm exam: Aug 30.**

Readings
- "The Probability Calculus," pp. 117-127 (Skyrms).
- "Conditional Probability" (Hacking).

Week 4: Chances as Frequencies or Propensities

Requirements
- Lecture: Sept 6.

Readings
- "'Mises Redux'–Redux" (Hajek).
- "Varieties of Propensities" (Gillies).

Week 5: Belief and Credence.

<u>Requirements</u>
- Lecture: Sept 13.

<u>Readings</u>
- "The relationship between belief and credence" (Jackson).
- "Belief, credence, and norms" (Buchak).

Week 6: Probabilism

<u>Requirements</u>
- Lecture: Sept 27.

<u>Readings</u>
- "Dutch Book Arguments," pp. 173-185, and pp. 189-195 (Hajek).

Week 7: Rational Updating

<u>Requirements</u>
- Lecture: Oct 4.

<u>Readings</u>
- "Rationality constraints II: Conditionalization" (Bradley).
- "Dutch Book Arguments," pp. 185-189 (Hajek).

Week 8: Chance and Credence

<u>Requirements</u>
- Lecture: Oct 11.

<u>Readings</u>
- "A Subjectivists' Guide to Objective Chance" (Lewis).

Week 9: Chance and Credence

Requirements
- Lecture: Oct 18.
- **First draft of final paper due: Oct 18, 11:59pm.**

Readings
- "Humean Supervenience Debugged" (Lewis).
- "Raid! Dissolving the Big, Bad Bug" (Ismael).

Week 10: Chances as Summaries

Requirements
- Lecture: Oct 25.

Readings
- "David Lewis's Humean Theory of Objective Chance" (Loewer).

Week 11: Expected Utility Theory

Requirements
- Lecture: Nov 1.
- **Homework 2 due: Nov 4, 11:59pm.**

Readings
- "The Probability Calculus," pp. 128-134 (Skyrms).
- "Normative Theories of Rational Choice: Expected Utility," sections 1 and 2 (Briggs), at plato.stanford.edu/entries/rationality-normative-utility/.
- "Risks and Tradeoffs" (Buchak).

Week 12: Centered Credences

Requirements
- Lecture: Nov 8.
- **Final draft of final paper due: Nov 8, 11:59pm.**

Readings
- "Self-Locating Belief and the Sleeping Beauty Problem" (Elga).
- "Sleeping Beauty: Reply to Elga" (Lewis).
- "Centering the Principal Principle" (Wilhelm).