



## **PHIL 570: Seminar in Epistemology**

**Units: 4.0**

**Spring 2025—Monday—16:20-18:50**

**Location:** Room 102 Mudd Hall of Philosophy

**Instructor: Dmitri Gallow**

**Office:** MHP 205B

**Office Hours:** Tuesday 12:00—14:00 and by appointment

### **Course Description**

This course is designed to give students an advanced introduction to Bayesian epistemology. We will not presuppose any prior familiarity with Bayesianism, and we will try to give a comprehensive overview of the foundational assumptions, arguments, and controversies in the field. Topics to be covered include: probability theory, interpretations of probability, normative principles connecting subjective and objective probabilities (or ‘chance-credence’ principles), debates about statistical inference, rules for how subjective probabilities ought to change after learning, pragmatic (or ‘Dutch book’) arguments for core Bayesian tenets, alethic (or ‘accuracy’) arguments for core Bayesian tenets, and controversies about self-locating probabilities.

### **Readings**

All readings will be available in electronic form through Brightspace. Some readings will come from the following books, which I commend to you as good resources:

- Bruno de Finetti. 2017. *Theory of Probability: A Critical Introductory Treatment*. Translated by Antonio Machí and Adrian Smith. Wiley: West Sussex.
- Joseph Y. Halpern. 2003. *Reasoning about Uncertainty*. The MIT Press: Cambridge.
- Colin Howson and Peter Urbach. 2005. *Scientific Reasoning: The Bayesian Approach*. 3rd edition. Open Court Publishing: Chicago.
- Deborah G. Mayo. 1996. *Error and the Growth of Scientific Knowledge*. The University of Chicago Press: Chicago.
- Richard Pettigrew. 2016. *Accuracy and the Laws of Credence*. Oxford University Press: Oxford.
- Michael G. Titelbaum. 2022. *Fundamentals of Bayesian Epistemology*. Volumes 1 and 2. Oxford University Press: Oxford.

### **Grading**

For those taking the course for credit, there will be three *tracks*: the skills track, the debate track, and the dual track. Those on the skills track will complete problem sets on the material from each topic. These problem sets will help them develop the mathematical skills necessary to follow and contribute to the more technical literature in Bayesian epistemology. Those on the debate track will write an approximately 10,000 word term paper on one of the debates we encounter over the course of the semester. Those on the dual track will complete half of the problem sets (of their choosing) and write an approximately 5,000 word term paper.

### Skills Track Grading Breakdown

Assignment	% of Grade
Problem Sets	80%
Attendance/Participation	20%

### Debate Track Grading Breakdown

Assignment	% of Grade
8,000 Word Term Paper	80%
Attendance/Participation	20%

### Dual Track Grading Breakdown

Assignment	% of Grade
Selected Problem Sets	40%
4,000 Word Term Paper	40%
Attendance/Participation	20%

### Attendance and Reading

If you are taking the course for credit, you are expected to attend every class meeting (unless excused). You are also expected to do all of the required reading. However, you are not expected to do the reading for a topic before class. If you find it helps you to come to class first, then you are free to do the reading after our in-class discussion.

### Course Schedule

This is a tentative and possibly overly optimistic course schedule. It may take us more time to cover some of these topics than I have scheduled for. If so, then we'll just pick up with that material next week where we left off. It is no problem if we don't finish all of the material by the time the semester ends; what's most important is that we fully understand and digest all of the material that we do cover. I expect that all students will be able to derive value from the required reading, no matter their mathematical background. Each optional reading comes with a score—'mild', 'medium', or 'spicy'— indicating how mathematically challenging it is to derive value from the reading, so you can judge for yourself whether it's worth your time to read it. If any students find the math difficult but want to master it, I will dedicate my normal office hours to giving supplementary lectures/lessons on the required math.

Jan 13 **Probability Primer and The Off-the-Shelf Bayesian Model**

Jan 27 *Topics to be covered: probability theories, countable additivity, the principle of indifference, conditionalization, interpretations of probability, random variables, and expectations*

Relevant Readings:

- (1) Michael Strevens. [Notes on Bayesian Confirmation Theory](#). §1–4 and 6
- (2) Michael G. Titelbaum. *Fundamentals of Bayesian Epistemology I*. Chapters 2–4.
- (3) Alan Hajek. [Interpretations of Probability](#). (optional–mild)
- (4) Colin Howson and Peter Urbach. *Scientific Reasoning: The Bayesian Approach*. Chapter 2. (optional–medium)

(5) Richard C. Jeffrey. [Subjective Probability: The Real Thing](#). Chapter 4. (optional–medium)

(6) Bruno de Finetti. *Theory of Probability* (2017). Chapter 3. (optional–spicy)

(7) Bas C. van Fraassen. *Laws and Symmetry*. Chapter 12. (optional–mild)

Relevant video (optional–mild):

(8) Grant Sanderson. [Bertrand's Paradox](#) (and [More on Bertrand's Paradox](#))

Feb 3 **Objective and Subjective Probabilities**

*Topics to be covered: the Principal Principle and the New Principle*

Relevant readings:

(1) David K. Lewis. *A Subjectivist's Guide to Objective Chance*.

(2) Michael Thau. *Undermining and admissibility*. (optional–mild)

(3) Ned Hall. *Correcting the Guide to Objective Chance*.

(4) Christopher J. G. Meacham. *Two Mistakes Regarding the Principal Principle*. (optional–mild)

Feb 10 **Bayesian, Frequentist, and Likelihoodist Approaches to Statistics**

Feb 24 *Topics to be covered: statistical inference, null hypothesis significance testing, probabilistic modus tollens, likelihoodism, Bayesian inference, conjugate priors, Laplace's 'rule of succession'*

Relevant readings:

(1) Elliot Sober. *Evidence and Evolution*. §1.1–1.5.

(2) Michael G. Titelbaum. *Fundamentals of Bayesian Epistemology vol 2*. §13.2–13.3.

(3) Colin Howson and Peter Urbach. *Scientific Reasoning: The Bayesian Approach*. Chapter 5. (optional–medium)

(4) Deborah G. Mayo. *Error and the Growth of Scientific Knowledge*. §3.3–3.4. (optional–mild)

(5) Clyde et al. [An Introduction to Bayesian Thinking](#). Chapter 2. (optional–spicy)

(6) Jonathan Weisberg. [Laplace's Rule of Succession](#). (optional–spicy)

Mar 3 **Arguments for Probabilism**

Mar 10 *Topics to be covered: Dempster-Shafer functions, representation theorems, Dutch book arguments, and accuracy domination arguments*

Relevant readings:

(1) Michael Titelbaum. *Fundamentals of Bayesian Epistemology vol 2*. Part IV.

(2) Joseph Y. Halpern. *Reasoning about Uncertainty*. §2.4. (optional–spicy)

(3) James M. Joyce. *A Nonpragmatic Vindication of Probabilism*. (optional–medium if you ignore the proofs)

(4) Richard Pettigrew. *Accuracy and the Laws of Credence*. Part I. (optional–spicy)

Mar 10 **Arguments for Conditionalization**

Mar 24 *Topics to be covered: conditionalization, reflection, Dutch strategy arguments, and expected accuracy arguments*

Relevant readings:

(1) David K. Lewis. *Why Conditionalize?*

(2) Susan Vineberg. [Dutch Book Arguments](#). §4.

(3) Bas C. van Fraassen. *Belief and the Will*. (optional–mild)

(4) Brian Skyrms. *Dynamic Coherence and Probability Kinematics*. (optional–medium)

(5) Kenny Easwaran. *Expected Accuracy Supports Conditionalization—and Conglomerability and Reflection* (optional–medium if you ignore the proofs)

(6) Richard Pettigrew. *Accuracy and the Laws of Credence*. Part IV. (optional–spicy)

Mar 31 **Alternatives to Conditionalization**

Apr 7 *Topics to be covered: Jeffrey conditionalization, Field conditionalization, Schoenfield conditionalization, and maximizing expected accuracy in general*

Relevant readings:

- (1) Richard C. Jeffrey. *The Logic of Decision*. Chapter 11.
- (2) Miriam Schoenfield. *Conditionalization Does Not (in General) Maximize Expected Accuracy*. (optional–mild)
- (3) Hartry Field. *A note on Jeffrey conditionalization*. (optional–medium)
- (4) Marc Lange. *Is Jeffrey Conditionalization Defective by Virtue of Being Non-Commutative?* (optional–mild)
- (5) Yoav Isaacs and Jeff Sanford Russell. *Updating without evidence*. (optional–medium if you ignore the appendix)

Apr 14 **De Se Probabilities**

Apr 21 *Topics to be covered: the Sleeping Beauty puzzle, Dutch book arguments for halving/thirding, expected accuracy arguments for halving/thirding, updating de se credences*

Relevant readings:

- (1) Adam Elga. *Self-locating belief and the Sleeping Beauty problem*.
- (2) Michael G. Titelbaum. *Ten Reasons to Care about the Sleeping Beauty Problem*.
- (3) R.A. Briggs. *Putting a Value on Beauty*. (optional–medium)
- (4) Michael G. Titelbaum. *Self-Locating Credences*.

Apr 28 **Ockham's Razor and Convergence-to-the Truth**

*Topics to be covered: Bayesian convergence theorems and Bayesian curve-fitting*

Relevant readings:

- (1) Adam Elga. *Bayesian Humility*.
- (2) Gordon Belot. *Edenic Orgulity*. (optional–mild)
- (3) Gordon Belot. *Curve-fitting for Bayesians?*
- (4) Gordon Belot. *Bayesian Orgulity*. (optional–spicy)

## Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or “recycle” work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

Academic dishonesty has a far-reaching impact and is considered a serious offense against the university. Violations will result in a grade penalty, such as a failing grade on the assignment or in the course, and disciplinary action from the university itself, such as suspension or even expulsion.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment or what information requires citation and/or attribution.

### **AI use not permitted**

This course aims to develop creative, analytical, and critical thinking skills. Therefore, all assignments should be prepared by the student working individually or in groups. Students may not have another person or entity complete any substantive portion of the assignment. Developing strong competencies in these areas will prepare you for a competitive workplace. Therefore, using AI-generated text, code, or other content is prohibited in this course, will be identified as plagiarism, and will be reported to the Office of Academic Integrity.

## **Statement on University Academic and Support Systems**

### **Students and Disability Accommodations:**

USC welcomes students with disabilities into all of the University's educational programs. [The Office of Student Accessibility Services](#) (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](https://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

### **Student Financial Aid and Satisfactory Academic Progress:**

To be eligible for certain kinds of financial aid, students are required to maintain Satisfactory Academic Progress (SAP) toward their degree objectives. Visit the [Financial Aid Office webpage](#) for [undergraduate-](#) and [graduate-level](#) SAP eligibility requirements and the appeals process.

### **Support Systems:**

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline consists of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services

(though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call  
Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086  
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-2500  
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776  
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411  
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101  
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call  
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call  
Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)  
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu)  
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.