

Seminar on Formal Epistemology:  
Belief and Evidence (80-521/80-821)

Spring 2021

Tuesday/Thursday 4:00–5:20, fully remote

<https://canvas.cmu.edu/courses/22353>

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**Description:** There has been a flurry of recent work on a variety of modal logics designed for reasoning about knowledge, belief, and evidence, in both static and dynamic contexts. What is the relationship between knowledge and belief? What is the role of evidence and justification? How do we react to new information, update our beliefs, and reason conditionally? These are old questions which modern logical frameworks promise to shed new light on. In this seminar we will read and analyze contemporary papers on these topics, both to gain an understanding of the current state-of-the-art, and to critically assess the extent to which these formal frameworks are genuinely enhancing our understanding of the underlying phenomena of interest.

**Structure:** This seminar is *fully remote*, meaning all aspects happen online. All course resources and meetings will be posted on Canvas (see link above).

- Tuesdays will typically focus on introducing a new paper, either through a presentation or a class discussion.
- Thursdays will be geared toward diving deeper into topics of particular interest or subtlety in the paper introduced the previous Tuesday.
- All meetings will be recorded and available (on Canvas) for the duration of the semester.

**Evaluation:** 4 contributions: 70%. 1 final paper: 20%. Class engagement: 10%.

In total you need to prepare and deliver 4 “contributions” over the course of the semester. These can take any of several forms, including:

- A high-level summary of a paper in the form of a 15-minute presentation with a supporting handout or slides.
- A deeper dive into some particularly challenging or complex part of a paper, similarly taking the form of a 15-minute presentation with a supporting handout or slides.
- A full-fledged, conference-style presentation of a paper, taking the form of an hour-long talk supported by slides and/or a handout. (*This counts as 2 contributions.*)

- A full-fledged, conference-style presentation of *your own research* in the area of formal epistemology, taking the form of an hour-long talk supported by slides and/or a handout. (*This counts as 1 contribution. Topics must be cleared in advance with me.*)
- A workshop-style commentary based on a full-fledged presentation (given by someone else), given in the form of a 15-minute presentation with a supporting handout or slides.

For any given paper, the contributions should be coordinated—e.g., it doesn’t make sense to have two “high-level summaries” of the same paper, nor can you give workshop-style comments on a paper that has not been presented.

At the end of the semester (due date: May 7) you’ll submit a short (approximately 5 pages) final paper taking one of two forms:

- A reflection on one of the topics we covered, clearly demonstrating your understanding of the material, its import, and/or its shortcomings.
- A draft of a novel extension, modification, or alternative to one of the frameworks we studied—something that you might aim to develop into a conference or journal submission, or part of a thesis.

The final portion of your grade is based on general class engagement. Simply showing up and adding your voice to the class discussions is enough to get full credit here.

**Environment:** Especially in the context of remote learning, some sense of community is essential.

- To the extent you feel comfortable doing so, please try to be an active participant in class and have your camera on.
- Treat each other with respect. I take this very seriously and invite you to reach out to me if at any point you feel uncomfortable for any reason.

For many of us, these are stressful times. My hope is for this seminar to be useful and interesting for you, and not yet another source of stress. My (virtual) door is always open if you find yourself struggling or need help. If any aspect of this course is problematic for you (due to the present circumstances or for any other reason), please reach out to me. I’m also very happy to hear general feedback and constructive criticisms about the seminar at any time.

Take care of yourself. Try to get enough sleep, go for walks in the fresh air, and connect as you can with the people you love. Take time to relax. You can’t achieve your goals if you’re sick from stress or burnt out.

All of us benefit from support during tough times. You are not alone—an important part of the college (and grad school!) experience is learning how to ask for help. If you or anyone you know needs help, consider reaching out to a friend, faculty member, or family member you trust. Counseling and Psychological Services (CaPS) is also here to help: call 412-268-2922 or visit their website at <https://www.cmu.edu/counseling/>.

## Schedule

All papers will be available through Canvas. Dates are subject to change.

<b>Date</b>	<b>Topic/Paper</b>	<b>Contributions</b>
2/2 2/4	introduction and review of epistemic logic	Bjorndahl
2/9 2/11	<i>On Logics of Knowledge and Belief</i> (Stalnaker)	
2/16 2/18	<i>Gettier Cases in Epistemic Logic</i> (Williamson)	Clune (summary)
<del>2/23</del> 2/25	responses to Williamson	
3/2 3/4	review of topology & topological semantics	Bjorndahl
3/9 3/11	<i>Justified Belief and the Topology of...</i> (Baltag et al.)	Sink (presentation) Duricy/Gorman (commentary)
3/16 3/18	<i>Logic and Topology for Knowledge...</i> (B. & Özgün)	Neeley (summary) Clune/Rooyakkers (deep dive)
3/23 3/25	<i>Uncertainty About Evidence</i> (B. & Özgün)	Duricy (summary) Neeley/Sink (deep dive)
3/30 4/1	<i>Higher-Order Evidence</i> (Dorst)	Dorst; Murthy (commentary) Rooyakkers (deep dive)
4/6 4/8	<i>Dynamic Logic for Belief Revision</i> (van Benthem)	Neeley (summary) Clune (deep dive)
4/13 4/15	“A Subjective Interpretation for Justification Logic”	Sink (pres.); Gorman (com.)
4/20 4/22	<i>Evidence and Plausibility in...</i> (van Benthem et al.)	Pacuit Murthy/Gorman (commentary)
4/27 4/29	<i>Revisable Justified Belief</i> (Baltag et al.)	Murthy (pres.); Duricy (com.) Rooyakkers; Clune; Gorman
5/4 5/6	“A Formalization of Dynamic Epistemic Logic” overflow & wrap-up	Neeley Duricy, Rooyakkers

## Campus Resources

**Academic Development (AD):** Academic Development is the place to go for help with your academic work. They offer everything from Academic Counseling in study skills to Peer Tutoring. They also offer Supplemental Instruction and EXCEL Groups for select courses. Their services are designed to help both students who are having academic difficulties and those who just want to improve their performance. For more information, visit <http://www.cmu.edu/acadev>.

**Global Communications Center (GCC):** The GCC, on the ground floor of Hunt Library, provides one-on-one tutoring in written, oral, and visual communication for any student, at any level, in any discipline, at any stage of the composing process (<http://www.cmu.edu/gcc>).

**Intercultural Communications Center (ICC):** The Intercultural Communication Center helps nonnative English speakers (both international students and students who attended high school in the U.S.) develop the English language skills and cultural understanding needed to succeed at Carnegie Mellon. The center offers classes and noncredit workshops and seminars (for example, Presentation Basics, Communicating Data Effectively, and Language and Culture for Teaching (for international TAs)). For more information, visit <http://www.cmu.edu/icc>.

**Disability Services:** The Office of Disability Resources at Carnegie Mellon University has a continued mission to provide physical and programmatic campus access to all events and information within the Carnegie Mellon community. They work to ensure that qualified individuals receive reasonable accommodations as guaranteed by the Americans With Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973. For more information, visit: <http://www.cmu.edu/disability-resources/>.

If you have a disability and have an accommodations letter from the Disability Resources office, I encourage you to discuss your accommodations and needs with me as early in the semester as possible. I will work with you to ensure that accommodations are provided as appropriate. If you suspect that you may have a disability and would benefit from accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact them at [access@andrew.cmu.edu](mailto:access@andrew.cmu.edu).