

LEHMAN
COLLEGE

PHI 169 • Critical Reasoning (Fall 2025)

Section 01F (Class #43511) • 3 Credits • Tue & Thu 1:30–2:45 PM
Carman Hall 224 • Aug 26–Dec 22, 2025 • **Instructor:** David Santamaría Legarda
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Office Hours: *In-person:* Thu 3–4 PM, *Remote:* By appointment

Welcome

This course is designed to be supportive, hands-on, and practical. Expect example-driven practice, and clear feedback. Please reach out early if you need help—my office hours are for your benefit and you can always drop me an email if you have questions.

Course Description

Official catalog description. Introduction to the concepts and methods of thinking, reading and writing analytically and evaluatively. No previous study of logic or philosophy is required. This course satisfies either the Scientific World or the College Option requirement in the CUNY 2013 Gen Ed requirements at Lehman.

Expanded description. This first-year course develops practical habits of critical reasoning for college work and public life. Students learn to reconstruct arguments in standard form and as maps; diagnose and repair language problems (ambiguity, vagueness, loaded terms); and choose and apply the right evaluation method for a claim: categorical diagram tests (Venn/Euler), truth-functional analysis (truth tables/countermodels), basic causal-design checks (confounders, comparison groups, timing/measurement, subgroup effects), and base-rate 2×2 risk analysis with natural-frequency interpretation. We also identify common informal fallacies, audit visual evidence (axes/denominators), and explain the scientific method in practice (hypotheses, controls, replication, publication bias). Work is supported by frequent short in-class quizzes, notebook exercises, and a scaffolded assignment sequence culminating in a 1,100–1,400-word argument analysis paper with a brief oral defense. Open-access materials are used throughout; no prior study of logic or philosophy is required.

Learning Outcomes

By the end of the semester, students will be able to:

1. **Reconstruct** arguments in standard form ($P1, P2, \dots \therefore C$), identify linked vs. independent support, and produce a simple argument map.
2. **Diagnose and repair** language problems (ambiguity, vagueness, loaded terms) by defining terms, adding missing co-premises or sub-conclusions, or narrowing scope.
3. **Choose, justify, and correctly apply evaluation methods appropriate to different types of claim** and communicate the result in plain English (methods used in this course include categorical diagram tests, truth tables, basic causal-design checks, and base-rate 2×2 risk analysis with natural-frequency interpretation).

4. **Identify** common informal fallacies and explain what makes each reasoning step defective.
5. **Critique visual evidence** by spotting axes/scale tricks, denominator problems (per-capita vs. totals), and aggregation effects (e.g., Simpson’s paradox), and propose fixes.
6. **Explain the scientific method in practice** (hypotheses, controls, replication, publication bias) and evaluate simple study designs.
7. **Write** an argument analysis paper ($\approx 1,100\text{--}1,400$ words) that includes a clean standard form and diagram, a correctly applied evaluation method, a good objection with a fair reply, clear risk/causal communication where relevant, and properly cited sources; and **produce it through a scaffolded process** with milestones (picking an article, outline/diagram check, draft and peer review, and final revision).
8. **Present and defend** their papers in a short oral explanation and respond to questions about their analysis.

Gen Ed Alignment

Flexible Core — Scientific World

- **How scientific claims are evaluated:** hypotheses, variables, controls, sources of bias, and replication limits.
- **Quantitative reasoning with evidence:** per-capita rates, subgroup/aggregation checks, and base-rate 2×2 risk analysis.
- **Evaluating causal claims:** identify plausible confounders, specify credible comparisons, and propose a simple robustness check.
- **Clear communication:** plain-English write-ups, annotated charts, and natural-frequency summaries.

College Option

Emphases include sustained writing with revision (scaffolded paper sequence), oral presentation, information literacy and academic integrity (including AI disclosure), and quantitative reasoning in context (tables, diagrams, and clear risk statements).

Materials & Costs

Primary (Required). Instructor *Lecture Notes*, posted weekly in Brightspace. These are the official reading for the course.

Secondary (Optional; \$0). Matthew Van Cleave, *Introduction to Logic & Critical Thinking*—free PDF/web. Suggested sections appear in the weekly calendar for students who want a second pass at the concepts.

Optional short media (no cost). Some weeks include a brief open-access article or video in Brightspace to illustrate a concept; these are recommended but not required unless explicitly marked.

Technology & Brightspace Use

We will use Brightspace for weekly modules, readings, and submissions. It can be accessed through the Lehman website at www.lehman.cuny.edu. We will go over how to access the site and its topography during the first week of class. If you have any questions about your Lehman email address or your password, or if you have any problems accessing the site please call the computer helpdesk at 718-960-1111. If a class moves online (weather/emergency), we will meet via Zoom through Brightspace. *Camera policy: cameras are required during class except where accommodations or bandwidth limits apply.*

Assessment & Grading

Component	Weight	Notes
Quizzes	10%	2–5 min at the start of class; lowest 2 dropped; no make-ups.
Notebook	10%	Notebooks will be collected 4 times to check progress, quick voice-over reflection each time notebook is collected.
Argument Analysis Paper	30%	Draft 10% (Week 12), includes 2 progress check-ins and peer-review • Final 15% (Week 15) • Oral Presentation 5% (Week 13).
Midterm Exam	20%	In-class.
Final Exam	30%	In-class, scheduled by the Registrar during Dec 16–22, 2025. The exact date/time will be posted in Brightspace, examines content from the whole course.

No extra credit assignments are planned.

Grading is criterion-referenced (no curve). If any adjustment is made (e.g., dropping a flawed item or adding a few points) to correct an assessment issue it will only be to *raise* (never lower) scores.

Letter grades are assigned using the following scale (A \geq 93, A– 90–92, B+ 87–89, B 83–86, B– 80–82, C+ 77–79, C 73–76, C– 70–72, D+ 67–69, D 63–66, D– 60–62, F < 60).

Key Policies

Attendance. Attendance is expected. Students receiving financial aid must be certified as attending classes regularly for continuing eligibility. *More than four unexcused absences may lower the final course grade by one step.* I will record attendance for verification of enrollment.

Late Work. *Graded assignments:* A 48-hour grace period applies with a –5% penalty. After 48 hours, late work earns 0% unless documented emergency. *Ungraded assignments and check-ins:* These support the scaffolded writing process and class activities. Credit is given only if completed on time; no late submissions accepted unless documented emergency.

Academic Integrity & AI. This course follows Lehman’s Academic Integrity Policy (lehman-undergraduate.catalog.cuny.edu/academic-integrity). Per the CUNY Board of Trustees: “*Cheating*

is the unauthorized use or attempted use of material, information, notes, study aids, devices, artificial intelligence (AI) systems, or communication during an academic exercise.” “Plagiarism is the act of presenting ideas, research or writing that is not your own as your own. Examples of plagiarism include: Copying another person’s or an AI tool’s actual words or images without the use of quotation marks and citations attributing the words to their source.” During our class, we may use AI Writing tools such as ChatGPT. You will be informed as to when, where, and how these tools are permitted to be used, along with guidance for attribution. If you use an AI tool where permitted, you must briefly disclose what you used it for (e.g., brainstorming, outline, grammar) and how you incorporated the AI’s output into your work. Any use outside of this permission constitutes a violation of the Academic Integrity Policy.

Accessibility. Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need classroom accommodations are encouraged to register with the Office of Student Disability Services. For more information, please contact the Office of Student Disability Services, Shuster Hall, Room 238, phone number, 718-960-8441.

Tutoring. The Academic Center for Excellence (ACE) offers writing/humanities tutoring; the Science Learning Center (SLC) supports science and quantitative work. See <https://www.lehman.edu/issp> or call ACE 718-960-8175 / SLC 718-960-7707.

Communication. Use Brightspace Messages or your Lehman email to contact me; I aim to reply within one business day (Mon–Fri).

Detailed Weekly Schedule

Required reading each week are the instructor’s **Lecture Notes** in Brightspace. Van Cleave (VC) sections are **optional** for reinforcement. Links to other optional materials will be provided in Brightspace. Calendar & Readings are subject to change, any change will be announced in Brightspace. Holidays, conversion days and withdrawal dates follow the official Fall 2025 Academic Calendar.

W1 (Aug 26/28)

Tue: Introducing arguments. **Thu:** Argument standard form. **Optional:** VC 1.1–1.2 & 1.5, HKU Critical Thinking Web: Argument analysis 1-2, ThinkerAnalytix *How We Argue* Supplemental Guide Lessons 1-2

W2 (Sep 2/4)

Tue: Introducing argument maps. **Thu:** Practicing argument maps. *Mon 9/1 Last day to drop with 75% tuition refund. Last day to drop without a grade of “WD”.* **Optional:** VC 1.4 & 1.9, HKU Critical Thinking Web: Argument analysis 10, ThinkerAnalytix *How We Argue* Supplemental Guide Lessons 3 & 5-6.

W3 (Sep 9/11)

Tue: Deductive & inductive arguments. **Thu:** Validity & soundness. *Mon 9/8 Last day to drop with 50% tuition refund.* **Optional:** VC 1.6–1.8, ThinkerAnalytix *How We Argue* Supplemental Guide Lesson 4, forall x: Calgary: Part I.

W4 (Sep 16/18)

Tue: Language issues: ambiguity and vagueness. **Thu:** Dealing with language issues. *Mon 9/15 Last day to drop with 25% tuition refund. Last day to drop without the grade of “W”.* **Due:** Notebook Check A on Thu 9/18. **Paper deadline:** Pick article by Fri 9/19. **Optional:** VC 1.10–1.11 & 4.1.5, ThinkerAnalytix *How We Argue* Supplemental Guide Lesson 7, Stanford Encyclopedia of Philosophy: Ambiguity and Vagueness entries.

W5 (Sep 23/25)

Tue: No class. **Thu:** Fallacies: Informal & Formal. **Optional:** VC 4.1, An Illustrated Book of Bad Arguments, Purdue OWL Logical Fallacies

W6 (Sep 30/Oct 2)

Tue: Fallacies: Relevance & presumption. **Thu:** No class. **Optional:** VC 4.3, UNC Writing Center — Fallacies, Excelsior Online Writing Lab Logical Fallacies

W7 (Oct 7/9)

Tue: Categorical Statements. **Thu:** Syllogisms. *Paper deadline:* First in-class check-in (Thu 10/9). **Optional:** VC 2.14-2.17, HKU Critical Thinking Web: Venn Diagrams

W8 (Oct 14/16)

Tue: No Class. **Thu: Midterm review.** *Due:* Notebook Check B on Thu 10/16.

W9 (Oct 21/23)

Tue: Midterm. **Thu:** Truth-functional logic. **Optional:** VC 2.2-2.5, forall x: Calgary: 4-5.

W10 (Oct 28/30)

Tue: Truth tables. **Thu:** The scientific method. *Paper deadline:* Second in-class check-in on Thu 10/30. **Optional:** VC 2.6-2.8, forall x: Calgary: 9 & 11, Calling Bullshit: “How do you know a paper is legit?” & Lectures 7.3 & 7.5.

W11 (Nov 4/6)

Tue: Scientific experiment. **Thu:** Causation. *Thu 11/6 Deadline to withdraw with a grade of “W”.* **Optional:** VC 3.4, Calling Bullshit: Lectures 3.1, 3.5, 3.6 & 4.3.

W12 (Nov 11/13)

Tue: Probability & risk. **Thu:** Objections & replies. *Paper Deadline:* Bring working draft for peer review Thu 11/13. *Due:* Notebook Check C on Thu 11/13. **Optional:** VC 3.5 & 1.12, ThinkerAnalytix *How We Argue* Supplemental Guide Lesson 8-10

W13 (Nov 18/20)

Tue: Paper presentations. **Thu:** Causal diagrams & Simpson’s paradox. *Paper Deadline:* Submit draft by Tue 11/18. **Optional:** The Effect: An Introduction to Research Design and Causality: 7.1–7.3 & 8.1-8.2, TED-Ed: “How statistics can be misleading”, UIUC Data Science Discovery: “Simpson’s Paradox”

W14 (Nov 25/27)

Tue: Assessing Visual Evidence. **Thu:** No class. **Optional:** Calling Bullshit: “Misleading axes on graphs” & “Proportional ink”.

W15 (Dec 2/4)

Tue: Natural Frequencies & Test Accuracy. **Thu:** Cognitive biases. *Paper Deadline:* Submit Paper by Thu 12/4. **Optional:** VC 3.6-3.10, Seeing Theory: Bayesian Inference, Gerd Gigerenzer: What are natural frequencies?

W16 (Dec 9/11)

Tue: Mock Exam. **Thu:** Exam revision. *Due:* Notebook Check D on Thu 12/11.

W17 (Dec 16/18)

Exam week, further revisions might be scheduled depending on exam date.