PHIL 103: Logic

Professor Matthew H. Slater
email: matthew.slater@bucknell.edu
office: 61 Coleman Hall | tel. 570-577-2767
office hours: W 1:30–3:30 PM & by appointment

http://blackboard.bucknell.edu/

The Course & Learning Objectives
Roughly speaking, logic is the study of reasoning as it is revealed through language. This course will introduce the concepts and methods of logical reasoning. We will analyze the structure and systematic form of arguments, developing standards and criteria for evaluating arguments. The course will consider both formal and informal aspects of logical thinking from a philosophical perspective with the aim of developing your innate reasoning abilities. Topics to be covered include: (1) A general introduction to the nature of logic and its use; (2) Examination of formal deductive logic; (3) Scientific (including causal, probabilistic, and statistical) reasoning.

This course will not only help you become a more careful, critical thinker — effectively analyzing arguments as they appear in the warp and woof of everyday life, ethics, politics, and science — but should also help you become a more creative thinker and problem solver.

Required Text
Please purchase a copy of the 8th edition of Sinnott-Armstrong and Fogelin’s Understanding Arguments, available at the Bucknell Bookstore in the Langone Center. Note that the 8th edition is different in several ways from the 7th (and earlier): make sure you get the correct one. Other readings will be made available online on blackboard.

The Structure of the Course
Your final grade will be based on your accumulation of points over the semester. There will be ten homework assignments, the lowest two being dropped (worth 100pts/each), somewhere around five quizzes, of which only your best four will be counted (50pts/each), three in-class exams (200pts/each), and one final exam (300pts). Thus, there are 1,900 points available in the course. To make this number even, I’ll put in 100pts for participation: showing up on time to class having read the material, being an active participant, and so on (see below). Score 1,800 points or more and you get an A, between 1,600 and 1,799 a B, . . . you get the idea.

It’s a known fact that smart people can find logic frightfully difficult. After teaching and TAing logic many times, I’ve become convinced that the only remedy to this is practice. You can listen intently as much as you like or memorize rules until you’re blue in the face, but unless you get your hands dirty doing problems, you won’t get it. If you find yourself struggling with a concept or technique, I strongly recommend doing more problems.

Speaking of which, my mode of operation in class will be lecture, but I invite questions, objections, clarifications, &c. as they arise (if I somehow fail to notice you, just blurt out “Wait, wait! . . .” or something). I’ll feel similarly free to request that certain conversations be continued in my office hours or after class if I think that it’s derailing the rest of the class too much.

Course Policies (READ THIS!)
HOMEWORK With a few exceptions, homework will be due on Wednesdays. Some of the exercises will be completed online (on Blackboard), some of them will be completed on paper and brought to class (if you choose to handwrite these, please write legibly!); make sure your name and the Homework number is on the page (e.g., ‘HW #1’). I will note on the schedule where you should turn in a particular exercise by marking it either ‘[online]’ or ‘[paper]’. Most homework assignments will have both online and in-class components. If an exercise is to be completed online, it must be completed by 3PM on the day in question, so that I can look at these before class. We will sometimes discuss the homework in class (e.g., by me asking students at random for their answers to certain questions); if I am convinced that the class as a whole generally understood the relevant concepts and put the requisite effort into the exercise, I shall give everyone full credit on those exercises — taking the exercises seriously will pay off. Of course, only those who actually completed the exercise (in a robust way), will benefit from this policy.

Late assignments will not be accepted, as I will be posting solutions shortly after they are due and we will often discuss them in class on the day they are due. (Being able to turn in a homework assignment for a penalized grade with the solutions available would hardly be fair.) Since the deadlines and problems are announced far ahead of time and I drop your lowest two, I will be strict in accepting only catastrophic excuses for late submissions (think: your dorm room was hit by a meteor; not you’ve got a cold). I strongly advise you to be working on the problem sets as we go along, as the problems are sprinkled throughout the text; strike while the iron is hot! Waiting until the day an assignment is due will usually result in pain and I won’t be at all sympathetic.

I am happy to allow you to work together on the problem sets so long as you bear two things in mind: First, you must submit your own answers (both on blackboard and in paper); Second, you cannot pass the course without doing decently well on the in-class exams/quizzes where there will be no group work, notes, or anything like that (just you, a pencil, and a few sheets of paper). So if you find yourself using your friends as a crutch, you should reevaluate your strategy. Here’s how I would recommend proceeding: get a few people together for a study session. Work on the homework individually in the same place. Then compare notes. If you disagree about an answer, talk about it. I’ll set up a discussion group on the website in which you can work on arranging study sessions, discuss problems with each other, and so on.
Accommodations for the Disabled
If you have a disability that may affect your performance in this course, please talk to me (either by email or in person) at your earliest convenience and I will make every effort to accommodate your needs. If you have not yet spoken with the appropriate Associate Dean about your disability (see http://www.bucknell.edu/x7759.xml), please do so as soon as possible. Accommodations will need to be sanctioned by their office.

Other Course Policies

Computer/Cell Phone/Blackberry/IM/Twitter/et c. Usage

Studies show that multitasking doesn’t work nearly as well as we all tend to think it does, especially when it comes to learning (see http://www.npr.org/templates/story/story.php?storyId=7700581). I will ask you to turn off your various communication devices while you are in class (you can be off the grid for 52 minutes thrice a week, I think). I discourage the use of laptops in class, as they present a strong temptation to distraction. At a minimum, please turn off your wireless connection. If I notice distractions ensuing from computer usage, I may forbid their use at an individual or group level and force you to go analog.

Communication

I have high expectations of you. You may have high expectations of me in return. I am happy to make myself available outside of class to discuss questions/Issues, go over assignments, read drafts, and generally help you sort out your thoughts on this material. If my regularly scheduled office hours won’t work, just get in touch to make an appointment. Nevertheless, as you are no doubt aware, my job at Bucknell is to be a teacher and a scholar — to have my research inform and enhance your experience in the classroom. As such, I will need to be protective of my research time. While I could, in principle, respond to emails and phone calls at odd hours, I make it a practice (or try, at least) to turn off my email at 7PM every night. Nor will I be available for appointments on Tuesdays (and rarely on Thursdays), as these days I reserve for working at my home office without distraction. I ask for your understanding of this dual role, as my successful research should ultimately improve my teaching.

Punctuality, Seriousness, Attendance, & Excuses

Here’s my attendance policy — it’s a little vague, but hopefully you get the idea: All things being equal, you should come to class and be on time. Let me elaborate some: I may not do a roll call, but I will usually notice whether you are there on time or not (and remember). I realize that sometimes things come up (you feel like crap, you put off a big project in another class, you’re family’s going to the Hamptons on Friday) and you need to make choices about whether to come to class. And that’s fine. I would just ask that you be prepared to live with your choices (not going to class may result in your missing a quiz, key discussion, and in general not doing as well as you’d have liked) and that you not lie to me. I’m often amazed both by the frequency of student lying and its poor quality. You don’t call out everyone you know is lying to you, do you? Well, neither do we professors. But it nevertheless informs our impression of the character of the other person. That’s something you might bear in mind (particularly if you think you might wish to call on me to write you a letter of recommendation down the road — you never know).

Accommodations for the Disabled

If you have a disability that may affect your performance in this course, please talk to me (either by email or in person) at your earliest convenience and I will make every effort to accommodate your needs. If you have not yet spoken with the appropriate Associate Dean about your disability (see http://www.bucknell.edu/x7759.xml), please do so as soon as possible. Accommodations will need to be sanctioned by their office.

Tentative Schedule

Burn After Reading! Do not rely on this printed schedule. It is intended as a starting point and will probably be adjusted depending on our progress (I will not be sympathetic about anyone who does the wrong reading/assignment because s/he attended to this schedule rather than to the most recent update of the Blackboard site).

Language and Argument

1. Introduction to Logic and the Course
   W 8/26

2. Arguments
   F 8/28
   - Read Understanding Arguments [henceforth ‘UA’] Chapter 1
   - HW #1: Read the syllabus carefully (including the “fine print”), Exercises I, II, III (odds) [paper]
   - Think about the discussion questions, many of which we shall discuss in class (make this a habit)

3. Linguistic Acts
   M 8/31
   - Read UA, Chapter 2

4. Conversational Implicature
   W 9/2
   - HW #2: Exercises II, III [online], IV, V (odds) [paper], VI (#11–20), VII (#1–5) [online], IX [paper], XII
5. The Basic Structure of Arguments
   • UA pp. 51–62

6. Assuring, Guarding, Discounting, Evaluating
   • UA pp. 63–75
   • Quiz #1 (on material from meetings 1–6)

7. Continued Discussion
   • HW #3: Exercises I, II, III (6–10), IV (odds), V [online], VI [paper], VII [online], VIII [paper], IX [online], X (1–5), XI (extra credit) [paper]

Informal Analysis of Arguments

8. Close Analysis
   • UA Chapter 4

9. Deep Analysis
   • UA Chapter 5, pp. 105–116

10. Deep Analysis II
   • UA Chapter 5, pp. 116–137
   • HW #4: Ch. 4: II [online], V (passages 3 and 6) [paper], Ch. 5: II [paper],

11. Deeper Still!
   • HW #4.2: Ch. 5: XIV [paper]

12. Exam #1 (on material from meetings 1–11)

Formal Analysis of Arguments: Propositional Logic

13. Propositional Connectives
   • UA Chapter 6, pp. 131–154
   • No HW Due (but you should begin work on HW #5!)

14. Testing for Validity
   • UA Chapter 6, pp. 154–162

15. Conditionals
   • UA Chapter 6, pp. 162–178
   • Quiz #2 (covering material from Chapter 6)

16. Conditionals Continued
   • HW #5: Ch. 6: I, II [online], III, IV [paper], V [online], VI, IX [paper], XII [online], XIII [paper], XVIII, XIX [online], XX, XXI [paper], XXIV, XXVII [online]

17. What Propositional Logic Can and Cannot Do

Categorical Logic

18. Categorical Propositions
   • UA Chapter 7, pp. 179–187

19. Contradictories
   • UA Chapter 7, pp. 187–190
   • HW #6: Ch. 7: I, II (odds) [online], III, IV [paper]

20. Validity for Categoricals
   • UA Chapter 7, pp. 190–202

Fall Recess Begins! No class on Monday the 12th

21. Validity Continued
   • HW #7: Ch. 7: V, VI [paper], VII (odds) [online],

22. Catch-up and Review

23. Exam #2 (on material from meetings 13–22)

Inductive Logic

24. Induction versus Deduction
   • UA Chapter 8, pp. 215–219 and discussion question on p. 229
   • No HW Due
25. Statistical Generalization
   • UA Chapter 8, pp. 219–229  

26. Causal Reasoning I
   • UA Chapter 9, pp. 231–240
   • Quiz #3 (covering material from meetings 24–26)

27. Causal Reasoning II
   • UA Chapter 9, pp. 240–255
   • HW #8: Ch. 8: IV [paper], Ch.9: I, II, III [online], V [paper]

28. Inference to the Best Explanation and from Analogy
   • UA Chapter 10

29. Probabilistic Reasoning I
   • UA Chapter 11, pp. 277–291

30. Probabilistic Reasoning II
   • UA Chapter 11, pp. 291–302
   • HW #9: Ch. 10: IV, V [paper], Ch. 11: II, III [online], V [paper], VIII (1-8) [online]

31. Choices
   • UA Chapter 12

32. Exam #3 (on material from meetings 24–31)  

Fallacies

33. Vagueness
   • UA Chapter 13
   • No HW Due

34. Ambiguity
   • UA Chapter 14

35. Relevance
   • UA Chapter 15
   • Quiz #4

36. Vacuity
   • UA Chapter 16
   • HW #10: TBA

37. Refutations
   • UA Chapter 17

38. Review and Catch-Up

Thanksgiving Break

Applications

39. Scientific Reasoning I
   • No reading assignment

40. Scientific Reasoning II
   • UA Chapter 20

41. Religious Reasoning
   • UA Chapter 21

42. Wrap-up and Review for the Final Exam

Final Exam: scheduled by the Registrar (stay tuned)