Lord Snopes has been brutally murdered! Either the maid or the cook did it, or else it was either the butler or the gardener. The maid did it only if it was done silently; but it was done quickly if the cook did it. However, it was done neither silently nor quickly. The butler did it if - but only if - it was done with a rope. It was done with a rope only if it was not done quickly. On the other hand, if the cook or gardener did it, then it had to be done with a pistol. But if it was done with a pistol, then it wasn’t done silently. Furthermore: it wasn’t done with a rope.

Sherlock Holmes can take this collection of facts and deduce the identity of the murderer. But you don’t need to be Sherlock Holmes to solve this problem. Symbolic logic provides the concepts and the formal techniques that can help you do just this sort of deductive reasoning. Anyone can solve the problem by applying the right rules.

WHAT THE COURSE IS ABOUT

This course introduces you to the aims and techniques of modern symbolic logic. The topics to be covered (don’t worry if you don’t understand this yet) include: the logic of truth-functions and quantifiers, the concepts of validity and proof and their relation to formal deduction, and the application of formal techniques (truth tables, truth trees, natural deduction proofs) to everyday reasoning. There are no prerequisites for the course; no philosophy, math, or computer background is presupposed. One of my goals is to help students who have felt intimidated by formal/symbolic systems feel more comfortable with this sort of material. We will start slowly, but we will pick up steam as we go.

REQUIRED TEXT (FREE!)

The text for the class is Paul Teller’s A MODERN FORMAL LOGIC PRIMER – VOLUMES 1 & 2. The book is out-of-print, but the rights have reverted to the author, and he has very graciously made it available for
free here: http://tellerprimer.ucdavis.edu/. This page has links to related software, and the link on the bottom takes you to the files containing individual chapters, the answer key, and so on. The book will also be available on LATTE—each volume as one PDF. Be sure to follow Teller’s advice and download it to your computer so you won’t be dependent on the website.

NOTE: Many students have reported to me that reading the material on-line didn’t work well for them, but that printing out each volume and using it as a book was very helpful. I expect that this will be true for most students, so I suggest that you print out each volume and bring it to class, annotate it, and so on.

WHAT WILL BE EXPECTED OF YOU

Readings & Exercises. It is crucial that you do the reading and make a good faith effort on the exercises before class. There will be specific reading assignments, but the exercises will not be submitted or graded (the Answer Key for the book will be available on the LATTE site). A rule of thumb for the exercises: try the first few; if they’re easy, jump to the hardest ones at the end; if you have trouble, use these to figure out what you don’t know; go back and re-read relevant section. The reading assignment schedules (and much else) will be regularly posted on LATTE.

Problem Sets. Submit problem sets as assigned. There will be 3-4 problem sets, and they will account for around 10% of your grade. Problem Sets up to one day late will be accepted for half-credit. No late work is accepted after the answer sheet is posted or handed out (even if you’re not in class that day). The problem sets will challenge you and are designed to help you learn the material. Sometimes material not (yet) covered in class will be on a problem set. If you make a good faith effort and get them in on time you will get full-credit - you will not be penalized for errors. They will be graded

• ‘check’ (the default grade),
• ‘check minus’ (you’re not yet competent with the material and need to catch up)
• ‘check plus’ (excellent)

Tests. There will be 2 tests – a midterm and a final - each worth (about) 35-40% of your final grade. If you do better on the second exam, it will count more heavily towards your final grade. If you will miss a test but have what you consider to be a legitimate excuse, you must contact me beforehand (the earlier the better).

Practice tests (with answers) will be available in advance, but answering a real test question often will require you to apply your knowledge to new problems not specifically discussed in class nor in the book. This ability to use your knowledge in new situations requires study activities different from memorizing.

Quizzes. There may be periodic quizzes to help you figure out if you’re up to speed—details TBA

Attendance and class participation. ATTENDANCE IS REQUIRED. You may miss 4 classes without penalty. (If you miss more than 2 classes during the shopping period, you will still have 2 excused absences remaining.) Participate in class—bring the text with you. Attendance and class participation will count for around 10% of your grade. NOTE. This class may be fairly large. I still want class participation and questions from students, because that’s how I find out what’s unclear in the text, what I’ve under-explained (or over-explained), etc. But I may not be able to get to all your questions and comments. That’s part of why there’ll be review sessions (see below). But feel free to email me or the TAs about specific questions, and of course—come to office hours to talk.

IMPORTANT. There may be classes at Brandeis in which you can coast for much of the term, then make heroic efforts at the end and do well. Unfortunately for you coasters, this isn’t one of them. The students who don’t do well in this class are inevitably those who fall behind. Plan to work steadily.

TEACHING ASSISTANTS & PEER TUTORS

Philosophy Dept graduate students, will be serving as Teaching Assistants for the course (details TBA). They will be responsible for grading your problem sets and exams. They will also be holding office hours
(time and locations TBA), running review sessions, and in general doing what they can (within limits!) to enhance your experience in the course and help you master the material. IMPORTANT: if you're having a problem with the class material, the quicker you get help to catch up the better - use the support resources that are available.

LEARNING GOALS

Students in Philosophy 6a will acquire familiarity with the techniques of modern formal logic and consider carefully the relation of these techniques to reasoning and to ordinary language. They will acquire some understanding of key ideas including: entailment, proof, formal system, logical form, the theory-metatheory distinction, soundness and completeness, and the syntax-semantics distinction.

Students will learn to attend to and to represent logical structures that underlie thought and language, and they will learn techniques for evaluating the validity of arguments, and for determining other logical properties. They will see how such formal systems are constructed and evaluated, and consider the strengths and weaknesses of such systems.

POLICIES

Disability. If you are a student with a documented disability at Brandeis University and wish to have a reasonable accommodation made for you in this class, please see the course instructor immediately.

Academic Honesty. You are expected to be honest in all of your academic work. The University policy on academic honesty is distributed annually as section 5 of the Rights and Responsibilities handbook. Instances of alleged dishonesty will be forwarded to the Office of Campus Life for possible referral to the Student Judicial System. Potential sanctions include failure in the course and suspension from the University. If you have any questions about my expectations, please ask.

Electronics. You are not allowed to have an open laptop in this class. Please turn off your cell phones for the duration of the class.

Four-Credit Course (with three hours of class-time per week). Success in this 4 credit hour course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (readings, doing exercises, problem sets, discussion sections, preparation for exams, etc.).

Communications. The course will have a mailing list on LATTE. Information about snow days, changed deadlines, and so forth will be broadcast on that mailing list. We may make use of LATTE discussion forums as well.