Logic and Critical Thinking

Course packet

Instructor: John Davenport
Fall 2005

Phlu 3203
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15. Fogelin and Sinnott-Armstrong, Understanding Arguments, selections.
17. Sample Puzzle: Radio Days (by Penny Press)
18. Other Hints (on solving matrix puzzles)
19. Matrix Problems from logic magazines
20. Preparing to Take the LSAT, from Getting into Law School.
Logic and Critical Thinking

Phlu 3203, Fall 2005

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Office Hours: Fridays 1-3 and by appointment; most Wednesdays I’m at Rose Hill for meetings, and most Tuesdays I’m home (check email or the signup sheet on my door for switches in office hours).

Introduction:
This class focuses on elements of logic helpful for the LSAT exam, and more broadly for rigorous reasoning of several different kinds (inductive, deductive, factual, normative, etc.). The emphasis is on the elements of critical thinking (such as avoiding various informal and formal fallacies), basic structures of arguments and their analysis, and logical problem-solving. The course includes an introduction to symbolic logic using the sentential calculus and classical syllogistic reasoning, but not the more advanced predicate logic. But we will cover other topics not normally addressed in a Symbolic Logic class, including causal flow diagraming and matrix problems. Thus this course is more difficult and broader than the average Introduction to Critical Thinking course but less difficult than Symbolic Logic courses that typically focus on the predicate calculus.

Benefits:
— Any philosophy major or minor, or political science major, should have a solid grounding in the elements of argument and be able to identify the main fallacies as well discern whether an argument is valid and well-supported, or where its weaknesses lie.
— These skills will be useful for anyone engaged in argumentative writing or the defense of controversial positions in any field. The course will hone one’s reasoning powers in general.
— The course provides some preparation for the LSAT and logical reasoning sections of other graduate entrance exams, although it should not be thought to substitute for an exam preparation course.
— Likewise, the course will provide some general preparation for analytical writing sections of the GRE. The skills developed in this course will stand you in good stead for work in just about any field of graduate study.
— This course will also provide excellent preparation for studying predicate logic, which would be the natural next step, especially for anyone interested in further study in philosophy, mathematics, or information science.

Topics: The course will cover a number of closely connected subjects in effort to develop students’ all-round analytical skills and ability to understand the merits of good arguments. Students will also learn to fashion their own arguments in the most persuasive manner:

— Soundness vs validity, premises vs inferences, how to evaluate starting assumptions;
— The elements of adequate or dialectically complete deductive and inductive arguments;
— How to criticize arguments by spotting formal and informal fallacies and other weaknesses;
— Different strategies or approaches to proving your thesis (the art of proof);
— Factual vs practical arguments; the use of statistics and probability;
— Basic inference forms and a brief introduction to symbolic logic with truth-tables;
— Causal flow charts and decision tree analysis;
— Using matrices and other analytic tools for solving logic puzzles (as in logic magazines);
— The notions of necessity, possibility, counterfactuals, entailment and their uses in argument;
— Important aspects of moral, legal, and political argument.

Texts: These texts are all required. The books are available in the bookstore and you must buy the correct edition. (However, there aren’t enough copies of the Hinderer’s book, which is out of print. You can order it on the internet or copy an original on reserve in the library). The course packet will be available through the instructor.
4. Course packet for all other handouts and readings, including parts of new logic textbook press. Students pay for the course packet with a $10 money order to reimburse the dept’s account.

Requirements:
2 argument analyses 20%
4 problem sets 50%
1 mock LSAT as a final exam 15%
In-class participation and exercises 15%

Other Policies

Computer Disks: You should never plead that the computer ate your disk. Especially at this campus, you should always save any paper, at every stage of drafting, *on more than one disk!!* Use zipdisks or USB flash drives (they rarely go bad). Backup is the most basic principle in using computers for college work. If your disk goes bad, I'll say, "where's your backup?"

Honesty and Citation: I take this very seriously; cheating is the one unforgivable sin. All your work for this class must be original, must be your own, and you must cite your sources, both when you quote text, and when you paraphrase. Examples of cheating:

(1) Handing in work you did for another class without clearing it with me.
(2) Copying another student's work on a test or paper, with or without their permission.
(3) Handing in an essay downloaded from the internet, copied from an uncited website, or copied from an encyclopedia, book, or article without citation is plagiarism. This holds true even if the wording has been significantly changed.

*If I judge that a student has cheated in any of these ways, or in any comparably serious fashion, that student will fail the entire course and it will go on his/her permanent record here. If there are any prior offenses on record, suspension is possible.* A very minor infraction results in an F for the
entire assignment, usually dropping your final grade by a whole letter. Almost every semester I have
to fail one or more students for this reason. Don’t be that person.

Group Work for this class: Argument Analyses and Problem Sets may be done in small groups,
BUT IF you choose to work this way, please indicate on the top of your assignment who you
worked with. Work should be divided equally in such groups. Also, realize that there is a risk that
the errors of others may affect your grade if you work this way. You should try to solve each
question by yourself, relying on others’s reasoning in your group only to check your own work.

Secondary Sources: You do not really need secondary sources for this course. Just do the primary
readings. However, if you want more information, go to the new Routledge Encyclopedia of
Philosophy first. Never depend on the Encarta Encyclopedia, which is very unreliable. There are
other much better online guides to Philosophy (see the department website). If you are interested in
further reading in the philosophy of logic, I can recommend sources.

If you do bring in ideas and quotes from secondary sources, but you must cite them either by
footnotes or parenthetical references referring to a bibliography at the end of the paper. Even if you
acknowledge an internet site, for example, you can’t just lift large sections of its text wholesale: only
take short quotations, clearly indicated as such in your paper.
—This includes paraphrases: even if you reword what the author said, cite the page number.
—It also includes websites: give the full URL of the page you cite. Note that webpages
should never be the only source you cite in college essays.

Tentative Schedule

Part I: Analysis of Arguments

9/1: Introduction to Different Types of Argument
(1) In-class exercise: Hermione’s “Riddle of the Potions”
(2) Fogelin and Sinnott-Armstrong, Understanding Arguments, ch.1 on conversational acts
course packet)

9/5: Labor Day: No classes.

9/7-8: Recognizing Arguments; Validity and Soundness, Refutation
(2) Short exercise due in class on 9/8 (to be used for class discussion).

9/12-15: Definition; Inductive and Causal Reasoning
(1) Carter, ch.2 continued (pp.66-81): Types of Definition and Arguments in Context.
(2) Fogelin and Sinnott-Armstrong, Understanding Arguments, ch.9 on different types of inductive
reasoning [by analogy, best explanation, causes, statistical generalization] (course packet).
Also, time-permitting: introduction to probabilistic reasoning.
9/19-22: Introduction to Dialectical Excellence in Argument
(1) Damer, *Attacking Faulty Reasoning*, chapters 1-2
(2) Excursus: Apel, Alexy, and Habermas on the Rules of Discourse (course packet)
(3) Argument Analysis #1 due 9/22.

9/26-29: Exploration of Informal Fallacies
(2) See the list of “informal fallacies” in the course packet as well.

10/3-6: Informal Fallacies continued
(2) Argument Analysis #2 due 10/6.

10/10: No classes: Columbus Day.

10/13: Informal Fallacies continued

10/17-20: Symbolizing Arguments in Sentential Logic
(1) Begin Carter, ch.4 §4.1-4.7 (pp.191-260)
(2) Problem Set #1 due 10/20.

10/24-27: Truth Tables
(1) Carter, ch.4 through §4.7 continued.

10/31-11/3: Valid Deductive Forms
(1) Carter, ch.5 (pp.271-338).
(2) Problem Set #2 due 11/3.

11/7-10: Valid Deductive Forms and Syllogistic Reasoning
(1) Carter, ch.5 continued.
(2) Carter, ch.3 §3.1-3.7 (pp.117-163)

11/14-17: Syllogistic Reasoning continued.
(2) Syllogisms continued
(1) Problem Set #3 due 11/17.

11/21: The Rational Value of Structuring
(1) Begin Morgan Jones, *Thinker’s Toolkit* chapters 1-2, 6-8.

11/24: Happy Thanksgiving!

11/28-12/1: Causal Flow Diagraming and Matrix Problems
(1) Jones, *Thinker’s Toolkit*, chapters 6-8 continued.
(2) Matrix problems (commonly found in Logic puzzle magazines)
(3) Problem Set #4 due
12/5-8: Matrix Problems continued
(1) More matrix puzzles (see course packet)
(2) LSAT Problems solved in class (see course packet)

12/12: Conclusion
(1) Mock LSAT test in-class (final assignment).