

PHIL 488: Tutorial in Symbolic Logic

Whitman College – Fall 2012

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Mon. 2:30-4:00 & Thu. 1:00-3:00

Overview

This course will give you the opportunity to gain a basic competence in symbolic logic, as you would be expected to have in entering many graduate programs in philosophy. The focus will be on propositional and first-order quantificational logic, concluding with some of the basic ideas of set theory. You will learn to evaluate the status of logical formulae and arguments, to create examples and counterexamples, and to construct both informal and formal proofs. Throughout, you will also consider how the language and techniques of the formal systems relate to ordinary language and reasoning.

If you complete the assigned material before the end of the semester, you will be encouraged to take the opportunity to go further. Options will include an examination of the soundness and completeness of these logical systems, some questions in the philosophy of logic, the basics of modal logic, the basics of some non-classical logics, or perhaps other topics that may particularly interest you.

Course Materials

Hardware: David Barker-Plummer, Jon Barwise & John Etchemendy, *Language, Proof, and Logic*, 2nd edn. (CSLI Publications, 2011).

Software: We will also use the software package that comes with the book. The software cannot be reused, so **you must buy a new copy of the book.**

Also, make sure that you **save the registration number** that's printed on the CD. If you lose that number, you'll have to buy another copy of the book! (If you're nervous, I'd be happy to keep a copy of your registration number as a backup.)

On-Line: The authors of the textbook and software also have a very useful website:

<http://lpl.stanford.edu>

Among other things, the website contains hints and solutions to some of the exercises, and a download area where you can obtain the contents of the CD using your registration number. (Thus if you lose the CD itself, you can still have access to the software.)

Format

You will be working as independently as you would like, with no regularly schedule meetings. Help is readily available, but it will be up to you to seek it out. There is also considerable flexibility about the deadlines (explained below).

Overall, I would urge you to move as quickly through the material as you comfortably and confidently can. The textbook and software are quite clear and helpful, and it wouldn't be surprising if the work seems quite easy at times. Continuing to push ahead at those points will enable to you linger at the points that are more difficult for you, and/or to have time at the end of the semester to move on to more advanced and interesting topics.

Requirements and Grading

Homework: For each chapter, there are certain exercises (listed below) that you must complete, to ensure that you really do understand the material and techniques. The assigned exercises are the *minimum* that every student needs to do to ensure a thorough understanding of the material. If you are having any difficulties, you should certainly consider doing additional exercises –ones in the textbook that aren't assigned, and/or others that I can provide for you. (Some additional exercises are already posted to the CLEo site, but more are always available by request.)

The homework assignments are part of the learning process, and so they won't be graded individually.

Some of the exercises must be completed using one or more of the computer programs and submitted to the on-line "Grade Grinder," while others must be completed by hand and turned in to me.

- For Exercises Submitted to the Grade Grinder:
Make sure that the Submit program is set to have feedback sent to me, so I can keep track of your progress. It is permissible (and even encouraged!) to re-submit exercises, until you've solved them – but please only have the feedback sent *once*.
- For Exercises Turned In to Me:
If at all possible, all exercises to be turned in should be sent as e-mail attachments. Not only will that save paper, it will ensure the quickest turn-around. If necessary, you may leave a paper copy in my mailbox in the main Olin office.

Quizzes: There will be a series of graded quizzes throughout the semester, each one covering about 1-2 chapters of the textbook and modeled on the homework exercises. The quizzes will *not* be cumulative (at least, no more than the material is). Each quiz will be designed to take about a half-hour to complete, but you will have up to an hour if you need it. You will *not* be permitted to use the textbook, personal notes, or software for the quizzes. You will be able to take each quiz at a time and location of

your choosing, and will be trusted to adhere to the instructions on your own. You should contact me shortly before you're ready to take each exam, to arrange to pick it up.

The last quiz before each exam will be optional. If you're uncertain about your mastery of that material and would like to get the practice and feedback offered by the quiz, then you should take it. But if you feel comfortable with that material, you are welcome to proceed directly to the exam.

Exams: There will be a required mid-term exam on our work in propositional logic, and a required final exam that will cover that material as well as our work in quantificational logic and the basics of set theory. The mid-term exam will be designed to be completed in about an hour, but you will have up to two hours if you need it. The final exam will be designed to be completed in about two hours, but you will have up to three hours if you need it. You will *not* be permitted to use the textbook, personal notes, or software for either exam. You should contact me shortly before you're ready to take each exam, to arrange the exact time and location.

Self-Correction of Quizzes and Exams: After you complete each quiz or exam but before you submit it, you will have the option to engage in a process of self-correction. To do that, you will check your answers taking as much time as you need, and using all of the resources of the textbook, computer software (including the features that allow you to check your work), and anything else that would be helpful. Then on a separate sheet, you will identify any mistakes that you made, explain why they are mistakes, and present what you think are the correct answers. That sheet should then be submitted along with the completed quiz or exam. For each mistake that you are able to identify, explain, and correct, you will receive half-credit back toward your quiz or exam grade.

Overall Grade:

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|--------------------|-----|
| Average Quiz Score | 35% |
| Mid-Term Exam | 25% |
| Final Exam | 40% |

Deadlines

Homework: The homework assignments do not have individual deadlines. The only restriction is that you must complete all of the relevant assignments before taking each quiz.

Quizzes and Mid-Term – Setting the Deadlines: The deadlines listed on the schedule below are *tentative*, reflecting the steady pace I would use for a large introductory-level logic class. You are free to change any or all of those deadlines to fit better with your other coursework, personal life, etc. To do that, you must e-mail me your revised deadlines by **Friday, Aug. 30**.

Quizzes and Mid-Term – Extensions: Each student will begin the semester with a “bank” of **10 late-days**, to use as you see fit throughout the semester. There is no need to let me know in advance when you plan on using them – you may simply complete one or more of the quizzes or mid-term (but *not*

the final exam) after the deadline, up to a total of ten days. A 'late-day' is a 24-hour period, starting from 4:00 p.m. on the due-date. Using any part of a late-day removes it from your bank; fractions aren't saved. Note that taking an extension on one quiz or exam does not push back the deadline for the next one. So if you aren't able to catch back up that quickly, you'll need to use additional day(s) from your bank.

Final Exam: The final exam deadline is already set for the very last moment of the official exam week, and so you cannot complete it any later than unless you arrange for an Incomplete with the Dean of Students.

REMEMBER: The deadlines are the *latest* that you may complete a quiz or the mid-term; you are always encouraged to complete them earlier if you comfortably and successfully can.

Schedule of Assignments

NOTE: You should complete all of the "You try it" exercises for the assigned sections as you come across them, and then the Exercises identified here should be completed at the end of each section. The groupings here are meant to correspond roughly to what would be assigned for a single meeting of an introductory-level course, to give you a sense of the pacing.

Introduction pp. 1-11

| | |
|--------------|--------------------------------------|
| §§ 1.1 – 1.4 | Exercises 1.2 – 1.5, 1.9, 1.10 |
| §§ 1.5, 2.1 | Exercises 1.12, 1.15, 1.16, 2.2, 2.4 |
| §§ 2.2 – 2.4 | Exercises 2.17 – 2.20 |
| § 2.5 | Exercises 2.24 – 2.27 |

* QUIZ on chs. 1-2 due by Friday, September 7

| | |
|--------------|-----------------------------|
| §§ 3.1 – 3.3 | Exercises 3.3, 3.7, 3.10 |
| §§ 3.4 – 3.5 | Exercises 3.13 – 3.17 |
| §§ 3.6 – 3.7 | Exercises 3.18, 3.21 – 3.24 |

* QUIZ on ch. 3 due by Monday, September 17

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|--------------|--|
| §§ 4.1 – 4.2 | Exercises 4.2, 4.9 part 3 only, 4.12, 4.18 |
| § 4.3 | Exercises 4.20, 4.21 |
| § 4.4 | Exercises 4.27 – 4.30 |

* QUIZ on ch. 4 due by Friday, September 28

| | |
|--------------|---|
| §§ 5.1 – 5.4 | <i>do enough of the Exercises to make sure that you understand the material</i> |
| §§ 6.1 – 6.2 | Exercises 6.3, 6.4 * <i>handout on CLEo about strategies</i> |
| § 6.3 | Exercises 6.9 – 6.16 |

§§ 6.4 – 6.6 Exercises 6.17 – 6.20, 6.28, 6.29, 6.33, 6.38, 6.39

* QUIZ on chs. 5-6 due by Friday, October 12

§§ 7.1 – 7.2 Exercises 7.1 – 7.4, 7.12 – 7.13

§§ 8.1 – 8.2 Exercises 8.1, 8.11, 8.18 – 8.21, 8.44, 8.46, 8.48, 8.50, 8.52

§§ 7.4, 8.3

** additional problems available on CLEo*

* *OPTIONAL QUIZ* on chs. 7-8 due by Monday, October 22

**** MID-TERM EXAM on chs. 1-8 due by Friday, October 26**

§§ 9.1 – 9.4 Exercises 9.5, 9.6

§ 9.5 Exercises 9.9, 9.12

§ 9.6 Exercises 9.16, 9.17

§§ 10.1 – 10.2 Exercises 10.1, 10.9

* QUIZ on chs. 9-10.2 due by Monday, November 5

§§ 10.3 – 10.4 Exercises 10.20, 10.24 – 10.27

§§ 11.1 – 11.2 Exercises 11.2, 11.4, 11.11

§§ 11.3 – 11.4 Exercises 11.17, 11.18, 11.22

§ 10.5 Exercise 10.31

* QUIZ on chs. 10.3 – 11 due by Friday, November 16

§§ 12.1 – 12.4 *do enough of the Exercises to make sure that you understand the material*

§ 13.1 Exercises 13.2 – 13.4, 13.9 ** handout on CLEo about 'Taut Con'*

§ 13.2 Exercises 13.11 – 13.13, 13.17, 13.18

§ 13.3 Exercises 13.23 – 13.27, 13.33, 13.35, 13.40 – 13.45

§§ 14.1 – 14.2 Exercises 14.2, 14.10, 14.11

** additional problems available on CLEo*

* QUIZ on chs. 12-14 due by Monday, December 3

§§ 15.1 – 15.4 Exercises 15.14, 15.15, 15.19, 15.21

§ 15.5, 15.8 Exercises 15.27, 15.29, 15.58, 15.61, 15.64

§§ 15.9 – 15.10 Exercises 15.66, 15.70

* *OPTIONAL QUIZ* on ch. 15 due by Monday, December 10

**** FINAL EXAM on chs. 1-15 due by 4:00 p.m. on Friday, December 14**