Phil 100 : Logic and Critical Analysis (Spring 2012)

Course website: [http://www.artsci.wustl.edu/~grussell/Phil100S2012.html](http://www.artsci.wustl.edu/~grussell/Phil100S2012.html)


(you must by a new copy of this book, and take good care of your registration ID)


Class Times: Tuesdays and Thursdays at 11.30-1pm

Class Location: McDonnell 361

Prerequisites: None.

Instructor: Professor Gillian Russell

Email: grussell - at - artsci - dot - wustl - dot - edu

Office Hours: Tuesdays 4.15-5.15pm or by appointment, Wilson Hall 209

Teaching Assistant: Bryan Stagner

Email: bryan DOT r DOT stagner AT wustl DOT edu

Office Hours: 1-2pm, Tuesdays and Thursdays

Course Description:

This course is an introduction to logic for students with no previous experience with the subject. Logic is the formal study of arguments, where argument is intended in a very specific sense. Whenever anyone puts forward a set of reasons for accepting a sentence, e.g.:

*Most scientists are alarmists, so gobal warming is not a serious problem.*

Or,

*If Israel goes into the war, then the casualties will be much higher. But Israel will not go into the war, so casualty levels will be low.*

they are providing an argument. An argument in our sense is a sequence of statements, one of which is supposed to follow from, or be supported by, the others. In logic we are interested in characterising what makes an argument a *good* argument.

In this course we will study the semantics and proof theory for truth-functional logic and first order predicate logic with quantifiers, concluding with soundness and completeness proofs.

Syllabus

Sections marked "optional" on the book's content's page are not required reading unless I explicitly say that they are to be read (below or in class.)
Week 1 - Tuesday 17th and Thursday 19th January

Reading: Introduction (LPL)
Software Manual (LPL cd)
Chapter 1: Atomic Sentences

Use this time to familiarize yourself with the computer software, sorting out technical problems so that you know what you are doing when it is time to submit the first graded homework assignment. There will be a practice assignment and you should complete this and submit it to your TA as a way of familiarising yourself with process.

Week 2 - 24th and 26th January

Chapter 2: The Logic of Atomic Sentences
Chapter 3: The Boolean Connectives - including section 3.8

Week 3 - 31st January and 2nd February

Chapter 4: The Logic of Boolean Connectives - including sections 4.5 and 4.6
Chapter 5: Methods of Proof for Boolean Logic

Week 4 - 7th and 9th February

Chapter 6: Formal Proofs and Boolean Logic - including section 6.6 on proofs without premises
Chapter 7: Conditionals

Week 5 - 14th and 16th February

Tuesday: Review session
Thursday: MIDTERM EXAMINATION

Week 6 - 21st and 23rd February

Chapter 8 (including 8.3): The Logic of Conditionals and Soundness

Week 7 - 28th February and 1st March

Chapter 9: Introduction to Quantifiers
Chapter 10: The Logic of Quantifiers

Week 8 - 6th and 8th March

Chapter 11: Multiple Quantifiers

Week 9 - 13th and 15th March

SPRING BREAK!

Week 10 - 20th and 22nd March

Chapter 12: Methods of Proof for Quantifiers
Thursday: Bryan will be taking class.

Week 11 - 27th and 29th March

Chapter 13: Formal Proofs and Quantifiers

Week 12 - 3rd and 5th April
Chapter 14: More about Quantification
Chapter 15: First order Set Theory

Thursday: NO CLASS

Week 13 - 10th and 12th April

Tuesday: No class

Chapter 16: Mathematical Induction
Chapter 17: Advanced Topics in Propositional Logic

Week 14 - 17th and 19th April

Chapter 18: Advanced Topics in FOL (18.1-18.3 only)

Week 15 - 24th and 26th April

Chapter 19: Soundness and Completeness (19.1 only)
Thursday 28th April: Review Session

Assessment

The subject is largely mathematical in nature and assessment in this course will be by way of 6 problem sets to be done at home (60%), and the midterm (20%) and final (20%) examinations. Problem sets are to be turned in to Bryan, not to Professor Russell.

Problems sets for this course will be downloadable as .pdf files from the table below, and you will normally have about 1 week to complete them.

Policy on Late Work

Late work will incur a penalty at a rate of 20 percent of the total possible grade every 24 hours.

Academic Misconduct

It is very important that you understand the rules for collaboration on this course. You may work with other students in order to solve the problems in your take-home problem sets, in fact, this is encouraged. However each student must write up his or her own solutions alone. You may not do it with another student looking over your shoulder to correct you. You may not do this from notes which another student has made, nor may you make notes on another student’s written solutions. You may not lend or copy digital or paper homework solutions - at any stage of completion.

Collaboration is, of course, completely forbidden during the midterm and final examinations.

Sometimes it is unclear whether a hypothetical case of collaboration is permissible according to these rules, or whether it counts as misconduct, but it is your duty to ensure that ALL your collaborations are clearly permissible. One good way to do this is not to take any written notes whilst working with other students: use a chalk-board or white-board to work out ideas, or, if you use paper, dispose of the written solutions before you separate to write up your individual homeworks alone.

Students suspected of plagiarism or any other form of academic dishonesty or misconduct will be reported to the academic integrity officer for Arts and Sciences (currently Dean Killen), so that the incident may be handled in a consistent, fair manner, and so that substantiated charges of misconduct may be noted in students’ records.

N.B. With respect to Phil100 in particular, please note that the Grade Grinder incorporates a sophisticated mechanism for detecting plagiarism (the “timestamp” method) and I recommend that you read about it on the LPL website and in the LPL book. In past
incarnations of this course, students have been caught borrowing and copying homeworks and when the matter was brought to the attention of the academic integrity committee, hearings were held and they were found guilty. I hope not to have to go through that process with any of you, (or indeed, ever again) but in the interests of protecting the integrity of the course and its grades, I am committed to reporting any and all cases.

Homework Assignments

There will be one practice and six regular homework assignments during the course. The assignments may be downloaded from this table and they will be available at least a week before each deadline. Handwritten parts to be "turned in" go in the appropriate file of the "turn in" filing cabinet in the philosophy department office in Wilson Hall by 3:30pm on the day they are due. Files to be submitted via the Grade Grinder should be sent to Bryan (not to Professor Russell) before midnight, so please make sure that you have entered the right email address in the Submit application. (You can find Bryan's email at the top of this syllabus.)

<table>
<thead>
<tr>
<th>ASSIGNMENT</th>
<th>DUE DATE</th>
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<tbody>
<tr>
<td>Practice assignment</td>
<td>Friday 20th January</td>
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<tr>
<td>Assignment One</td>
<td>Friday 27th January</td>
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<td>Assignment Two</td>
<td>Friday 10th February</td>
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<td>MIDTERM EXAMINATION</td>
<td>Thursday 16th February, 2012, in class.</td>
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<td>Assignment Three</td>
<td>Friday 24th February</td>
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<td>Assignment Four</td>
<td>Friday 23rd March</td>
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<td>Assignment Five</td>
<td>Friday 6th April</td>
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<td>Assignment Six</td>
<td>Friday 20th April</td>
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<td>FINAL EXAMINATION</td>
<td>Monday, 7th May 1pm-3pm (If you want to take this course, you will need to make sure you are still on campus then.)</td>
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Related Links

The website for the book is here: http://www-csli.stanford.edu/LPL/

Richard Zach's guide to the LPL celebrities: Who are Fitch, Boole and Tarski?

Greg Restall's Great Moments in Logic

For those students who wish to take the class pass/fail, final grades for the course of C- or above will constitute a pass.