

Phil 455: Symbolic Logic

Fall 2015 Syllabus

Class times: Monday and Wednesday, 11.15am–12.30pm
Class location: Caldwell Hall, Room 213
Professor: Gillian Russell
Email: gillian_russell@unc.edu
Office hours: Friday 12.30-2.30pm
Office Location: 2nd Floor of Caldwell Hall
Problem sets due: Mondays by noon.
Course textbook: The Open Logic Project (OLP) (free via Sakai)

COURSE DESCRIPTION: This is a course in the model theory, proof theory and metatheory of first-order classical logic, aimed at students who have taken at least one course in formal logic in the past. In the first part of the class we will study sentential logic and practice some skills that we want to apply later, especially proof by induction and the production of informal proofs more generally. Then in the second part we will work our way through the first 62 pages of the Open Logic Project (OLP) book. Among the topics we will cover are sequent calculus proofs, completeness, compactness, and the Löwenheim-Skolem theorem.

READINGS AND TOPICS

N.B. Until October 5th there is no pre-assigned reading!

Wednesday 19th August - First day of class

Introduction to the course.
Soundness and Validity.
Syntax for the sentential language.

Monday 24th August

Interpretations

Wednesday 26th August

Logical Properties

Monday 31st August

Informal proofs.

Wednesday 2nd September

Disjunctive normal form—problem set 1 is due Monday 7th September

Monday 7th September

Labor Day - no class.

Wednesday 9th September

No class.

Monday 14th September

No class.

Wednesday 16th September

No class.

Monday 21st September

Expressive adequacy

Wednesday 23rd September

Proof by induction—problem set 2 is due Monday 28th September

Monday 28th September

Expressive adequacy (II)

Wednesday 30th September

Syntax revisited—problem set 3 is due Monday 5th October

Monday 5th October

First-order syntax

Reading: OLP pages 1-18

Wednesday 7th October

First-order Structures

Reading: OLP pages 18-24

Monday 12th October

University Day, no classes 10-1pm

Wednesday 14th October

Fall break - no class

Monday 19th October

Logical Properties Reading: OLP pages 24-26

Wednesday 21st October

Theories and models

Reading: OLP pages 27-31

Monday 26th October

In-class midterm exam.

No reading for today.

Wednesday 28th October

More first-order theories—problem set 4 due Monday 2nd November Reading: OLP pages 32–35

Monday 2nd November

No class.

Wednesday 4th November

Sequent calculus
Reading: OLP pages 36–40

Monday 9th November

Reading: OLP pages 41–43

Wednesday 11th November

Soundness—problem set 5 due Monday 16th November
Reading: OLP pages 44–51

Monday 16th November

Completeness
Reading: OLP pages 52–54

Wednesday 18th November

Completeness—problem set 6 due Monday 23rd November
Reading: OLP pages 54–59

Monday 23rd November

Adding identity
Reading: OLP pages 60–62

Wednesday 25th November

No classes today (thanksgiving)

Monday 30th November

Compactness and the Löwenheim-Skolem Theorem
Reading: OLP page 63

Wednesday 2nd December

There is no assigned reading for the last day of class.

Friday 4th December at NOON

Final exam: in our usual room

ASSESSMENT:

50% of your grade will come from the problem sets. (I'll drop your worst grade and average the rest.)

25% of your grade will come from the midterm exam.

25% of your grade will come from the final exam.

I will be giving out solutions to the problem sets approximately one week after the assignments are due. Any work turned in after the solutions have been given out will receive a zero.

Since the two exams are such an important part of your grade, you should make sure that you will be on campus to take them before you decide to take this course.

Assessment	Date
Problem set 1	Monday 7th September
Problem set 2	Monday 28th September
Problem set 3	Monday 5th October
In-class midterm exam	Monday 26th October
Problem set 4	Monday 2nd November
Problem set 5	Monday 16th November
Problem set 6	Monday 23rd November
Final exam	Friday December 4th at noon

Problem sets should be turned in by placing them in my mailbox on the 1st floor of Caldwell Hall before the deadline.

ACADEMIC INTEGRITY: It is important that you understand the rules for collaboration on this course. You may work with other students in order to work out solutions to the exercises in your take-home problem sets; in fact, this is encouraged. However, each student must write up his or her solutions to the exercises alone. You may not do it with another student looking over your shoulder to correct you. You may not write your homework 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 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 write anything down on paper whilst investigating problems 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.

gillian_russell@unc.edu