

---

Summer Session II 2019, UNC Chapel Hill  
M-F 1:15pm – 2:45pm; Caldwell Hall 105

INSTRUCTOR:

**Aliosha Celeste Barranco López**

✉ [aliosha@live.unc.edu](mailto:aliosha@live.unc.edu)

📍 Caldwell 12B

📅 OFFICE HOURS:  
Tuesdays 2:45pm-3:45pm,  
Fridays 9:00am-10:00am  
or by appointment.



# Philosophy 155:

Introduction to Mathematical Logic

---

2019

# CONTENT



- 01 Course Description
- 02 Aims of the course
- 03 Who can take this course?
- 04 What are we going to read?
- 05 Assignments
- 06 Appendix A: Description of the Assignments  
Problems sets
- 07 In-class participation
- 08 Midterms
- 09 Final exam
- 10 Appendix B: Important information to keep in mind  
Due dates and late policy
- 11 Accommodations
- 12 Plagiarism
- 13 Course schedule

## COURSE DESCRIPTION

Logic is about patterns of correct reasoning, and the study of logic is about identifying the patterns that reasoning has to follow in order to be correct. In other words, logic is about recognizing valid argument from invalid argument.

In this course, we will learn how to use one important form of logic (which is called first-order logic) and how to apply it to certain instances of reasoning that we might encounter in any part of life.

## AIMS OF THE COURSE

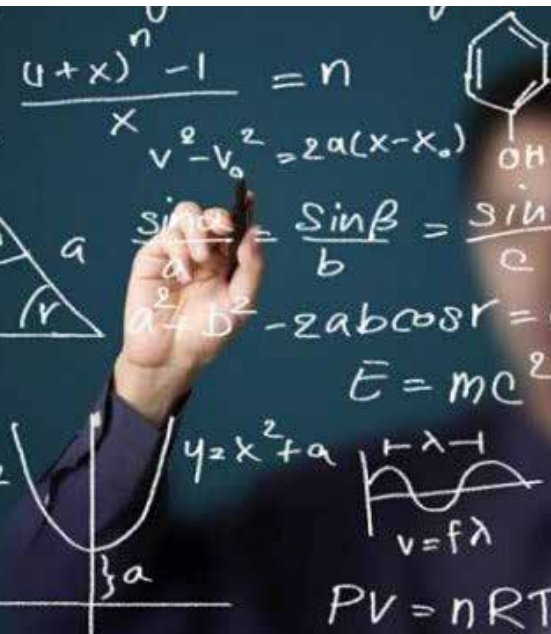
At the end of the class, you should (1) be a competent user of the language of first-order logic, (2) demonstrate the validity/ invalidity of some arguments, and (3) recall some patterns of valid arguments.

## WHO CAN TAKE THIS COURSE?

**Phil 155** is an introduction to mathematical logic at the college level that is intended to serve both majors and non-majors in philosophy. It is assumed that students in this class do not have previous knowledge of mathematical logic.

**Phil 155 students** are expected to take a very active role in their learning by completing the assigned readings *before* class, coming to class ready to directly participate with peers or through individual use of the LPL software, and to

individually complete the problem sets (and available exercises in the book when struggling).



## WHAT ARE WE GOING TO READ?

You will need new copy of the second edition of "Language, Proof and Logic" (by David Bake-Plummer, Jon Bar Wise & John Etchemendy). In addition, for *Fallacy Friday* we will read some abstracts of some from different books about fallacies (I will provide you with copies one day in advanced).

## ASSIGNMENTS

(For a description of each one of the assignments look at **Appendix A: Description of the Assignments**).

- 40% Four problem sets (10% each)
- 10% In-class participation
- 30% Two midterm exams (15% each)
- 20% Final exam

## APPENDIX A: DESCRIPTION OF THE ASSIGNMENTS

## PROBLEMS SETS

You cannot learn logic merely by reading the book or coming to lectures.

Instead, Logic is very similar to other quantitative subjects like Mathematics, Physics, Economics, etc. in that you will only learn it if you actively try to apply the concepts learned in class by solving many exercises. This is why this class will involve weekly problem sets that cover the material you have learned in a given week. Most of these problems will be taken from the list of exercises in the textbook, and many of these will allow you to get feedback through the program *Submit* before you officially submit them for grading.

I will post the problem sets on Sakai every Tuesday by 11:59 pm, each problem set will be due by 1:14pm the next Monday (except for the last problem set, due date TBD).

I encourage you to work on these problem sets with a friend or in a group - this way you can help each other in case one of you gets stuck! In my experience, it is always easier to learn this material if you talk it through with others (or if you explain it to others yourself!) Even if you work on the problem sets in groups, I would still recommend you to first sit down and try to solve the problems yourself, and only after you have either found a way to solve the exercises or identified obstacles to meet with others. Note, however, that even if you work on the answers together,

each person should still write down his or her own answers!

There will be 5 problem sets in this class that will well satisfy the 10 pages of written work required for courses meeting the General Education requirement. I will drop the lowest problem sets when calculating your overall problem set grade.

## IN-CLASS PARTICIPATION

Your participation grade makes up 10% of your final grade, and you will receive two participation grades, one for the first half of the course and another for the second half, each of which will be worth 5% of your overall grade.

Your participation grade is determined on the basis of the following criteria:

- 01 **Attendance:** you are expected to attend class each day. Barring exceptional circumstances, excused absences require formal documentation, such as a doctor's note or a letter from the Office of the Dean of Students.
- 02 **Alertness and Attentiveness:** you are expected to be alert and attentive in class. This requires that you be awake and not working on anything else. If you are experiencing special circumstances that interfere with satisfying this requirement, you must come to office hours to discuss your situation.

## APPENDIX A: DESCRIPTION OF THE ASSIGNMENTS

03

**Respectfulness:** you are expected to be respectful to your fellow students as well as the professor. This includes listening to what others have to say, waiting your turn to talk (i.e., not interrupting others), not having side conversations, not browsing the internet or using social media during class, etc. There is no exception to this criterion.

These three criteria will determine your participation in the following way:

Each day you are granted 1 point for satisfying the three criteria. If you satisfy them all each day, then you get your 5% of the week. However, if you:

a

Do not attend class one day, then you cannot get any participation point for the day.

b

Attend class and are disrespectful, then you cannot get any participation point for the day.

c

Attend class and are respectful, but are not alert or attentive, then you can only get 0.5 points of participation.

## MIDTERMS

There will be two midterm exams in this class. The midterms will consist of a series of problems that are supposed to test your understanding of the material up to this point - though they are not cumulative and only cover the material since the last midterm. The exams are designed to take around one hour to solve, but since I know solving logic problems under time pressure can be difficult, I am prepared to give you more time should you need it.

## FINAL EXAM

The final exam will be cumulative, though it will focus more heavily on the topics covered since the second midterm. The final (just like the midterms) will be closed book.



## APPENDIX B: IMPORTANT INFORMATION TO KEEP IN MIND

## DUE DATES AND LATE POLICY

Given the nature of Summer Sessions, there will be no granted extensions for any of the problem sets. However, if you if you have a valid reason for needing one (supported by the Dean of Students), I will give you an alternative assignment that would substitute the corresponding problem set.

## ACCOMMODATIONS

If you require reasonable accommodations for a documented disability, you must register with ARS (<https://accessibility.unc.edu/>). Once I receive ARS's recommendations, I will be happy to work with you to implement them as appropriate.

## PLAGIARISM

The UNC Instrument of Student Governance defines plagiarism as "deliberate or reckless representation of another's words, thoughts, or ideas as one's own without attribution in connection with submission of academic work, whether graded or otherwise." You are expected to abide by UNC's Honor Code, and refrain from any kind of academic dishonesty, including cheating and plagiarism. Just as you are bound by the Honor

Code not to plagiarize, I am bound by it to report suspected cases of academic dishonesty of any kind to the Honor Court.

On the homework problem sets, you are encouraged to collaborate with others.

However, you have to write down your own version of the solution - *Submit* automatically checks all submitted files for plagiarism (i.e. if certain files were copied and submitted several times). If you collaborate, please also write down the names of the people you collaborated with.

You might also sometimes get stuck on a problem and look online for solutions or approaches to the problem. I would encourage you not to do this, as this is not a good way to learn the material (come to office hours instead!), but if you do, you should likewise try to write down your own version of the solutions and not simply copy-paste something you found online. Likewise, if you do this, you should cite the website that you consulted.

On the midterms and the final exam, collaboration is not allowed - and any attempt to collaborate during the midterms or final exams will be reported to the Honor Court.

Please bear in mind that plagiarism can be committed non-deliberately; if you are reckless in your use of other people's ideas, then you have committed plagiarism even if you didn't mean to do so. If you have any questions at all about proper citation of other people's work or ideas in the course, please don't hesitate to come talk to me about

them. You are responsible for knowing what exactly counts as plagiarism and to not commit it in the work you submit for this class.

## COURSE SCHEDULE

**Note:** The following schedule is provisional and subject to change.

### WEEK 1



Monday, June 24th

P. 1-10

Introduction

Tuesday, June 25th

P. 19-28

Chapter 1 : Atomic Sentences

Wednesday, June 26th

P. 41-52

Chapter 2 : The Logic of Atomic Sentences

Thursday, June 27th

P. 54-66

Chapter 2 : The Logic of Atomic Sentences

Friday, June 28th

P. 67-77,  
79-89

Chapter 3: The Boolean Connectives

&FALACY FRIDAY! (TBD)

### WEEK 2



Monday, July 1st

P. 93-106

Chapter 4: The Logic of Boolean Connectives

Tuesday, July 2nd

P. 106-118

Chapter 4: The Logic of Boolean Connectives

Wednesday, July 3rd

First Midterm Exam

Thursday, July 4th —

No Class (Independence Day)

Friday, July 5th

P. 128-142

Chapter 5: Methods of Proof for Boolean Logic

&FALACY FRIDAY! (TBD)

# WEEK 3



Monday, July 8th  
 Tuesday, July 9th  
 Wednesday, July 10th  
 Thursday, July 11th  
 Friday, July 12th



P. 143-164 **Chapter 6:** Formal Proofs and Boolean Logic  
 P. 165-174 **Chapter 6:** Formal Proofs and Boolean Logic  
 P. 178-192 **Chapter 7:** Conditionals  
 P. 199-206 **Chapter 8:** The Logic of Conditionals  
 P. 207-213 **Chapter 8:** The Logic of Conditionals  
 &FALACY FRIDAY! (TBD)



Monday, July 22th  
 Tuesday, July 23th  
 Wednesday, July 24th  
 Thursday, July 25th  
 Friday, July 26th



P. 328-343 **Chapter 12:** Methods of Proof for Quantifiers  
 P. 351-367 **Chapter 13:** Formal Proofs and Quantifiers  
 P. 351-367 More on Formal Proofs and Quantifiers  
 REVIEW SESSION  
**No Class** (Reading Day)

# WEEK 4



Monday, July 15th  
 Tuesday, July 16th  
 Wednesday, July 17th  
 Thursday, July 18th  
 Friday, July 19th



P. 229-243 **Chapter 9:** Introduction to Quantification  
 P. 245-253 **Chapter 9:** Introduction to Quantification  
 Second Midterm Exam  
 P. 259-281, 291-296 **Chapter 10:** The Logic of Quantifiers  
 P. 298-313 **Chapter 11:** Multiple Quantifiers  
 &FALACY FRIDAY! (TBD)



Monday, July 29th  
 Tuesday, July 30th



**No Class** (Reading Day)  
 FINAL EXAM  
 11:30 - 2:30

# WEEK 6

# 2019

