

PHIL 155: Introduction to Mathematical Logic

UNC Chapel Hill
Spring 2018
TR 8:00 – 9:15 AM
Caldwell Hall 105

Instructor: Keshav Singh
Email: keshav@live.unc.edu
Office: Caldwell 210B
Office Hours: T 10-11 AM, R 11 AM – 12 PM

Course Description

Logic is about patterns of correct reasoning. The study of logic is about identifying the patterns that reasoning has to follow in order to be correct. In this course we will learn how to use one important form of logic (classical first-order deductive logic) and how to apply it to instances of reasoning that we might encounter in any part of life. Although this is a philosophy course, because of the nature of logic, it will be in certain ways more like a math or computer science course. In particular, the written assignments in this course will consist primarily of problem sets rather than essays. Some of these assignments will be completed online, so access to a computer is required.

No background in logic, philosophy or math will be presupposed. This course satisfies the QR requirement, *not* the PH requirement.

Course Requirements

Requirement	Weight
Take-home assignments	40%
In-class midterm exams	25%
In-class final exam	25%
Participation	10%

1. Take-home assignments

Each course at UNC must include at least 10 pages of written work. The written work in this course will take the form of a number of take-home assignments, worth a total of 40% of the course grade. Most of these assignments will be problem sets to be completed online through Carnap, a free, open-source framework for formal logic (<https://carnap.io>). Each student will need to register for Carnap and enroll in this course in order to complete these assignments. Separate instructions will be provided for any take-home assignments that are not to be completed through Carnap.

2. In-class midterm exams

There will be two in-class midterm exams in this course, worth a total of 25% of the course grade. The first midterm exam will be worth 10% and the second will be worth 15%.

3. In-class final exam

The final exam (worth 25% of the course grade) will be administered on **Tuesday, May 1st, from 8:00 AM until 11:00 AM**. The final exam will be cumulative, covering material from throughout the course. More information about the final exam will be provided later in the term.

4. Participation

Students are expected to carefully read the material assigned for each class in advance and arrive prepared to participate in discussions of that material. Participation is worth 10% of the course grade.

Attendance is necessary, but not sufficient, for full participation. In order to earn full credit for participation, students must also make valuable contributions to class discussions. Such contributions can take various forms, such as helping to work out problems in class or asking questions in class about the course material. In-class participation will be evaluated on the basis of frequency, constructiveness and respectfulness. Other forms of participation, such as discussing course material in office hours, or via email, will also be taken into consideration. However, these forms of participation cannot fully substitute for attending and participating in class.

Students for whom regular participation in class discussions will not be possible should contact me with their concerns. I will accommodate alternative methods of participation for such students to the best of my ability.

Course Policies

1. Honor Code

Students are expected to adhere to the UNC Honor Code by refraining from all forms of academic dishonesty as outlined in Section II.B of the UNC Instrument of Student Governance (<https://studentconduct.unc.edu/sites/studentconduct.unc.edu/files/documents/Instrument.pdf>).

All violations of the Honor Code will be reported to the university in accordance with university policy. This includes Honor Code violations that are unintentional but reckless or negligent. Students who are unsure as to whether they understand the Honor Code, or whether some particular action constitutes a violation, should consult me for clarification. Students should also contact me with any other questions or concerns related to the Honor Code.

2. Late Assignments

Students are expected to submit take-home assignments by the assigned due date. Unless an extension is obtained, late assignments will be accepted for partial credit only. Except in cases of emergency, extensions should be requested at least 24 hours before the due date. Extensions will only be given in the event of unforeseen circumstances that prevent students from completing the assignment on time. In the event of such circumstances, students are responsible for providing suitable documentation to me.

3. Contacting Me

I can be reached via email at keshav@live.unc.edu, or in person at my scheduled office hours. If a student is unable to attend office hours, I will also be available to meet by appointment. Students who wish to request an appointment should contact me at least 24 hours (and preferably longer) before the desired meeting time. In general, I will attempt to respond to all student emails within 24 hours, but I cannot guarantee that I will always be able to. Students should contact me with their questions and concerns as far in advance as possible.

4. Non-discrimination Policy

UNC is committed to equality of educational opportunity. The university does not discriminate in offering access to its educational programs and activities on the basis of race, color, gender, age, national origin, religion, creed, genetic information, disability, veteran's status, sexual orientation, gender identity, or gender expression.

In addition, I am committed to making my classroom a safe space for all students. Personal attacks or discriminatory treatment of others by anyone will not be tolerated under any circumstances.

5. Accommodations

UNC facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability or pregnancy complications resulting in difficulties with accessing learning opportunities. All accommodations are coordinated through the Accessibility Resources and Service Office. Students who have need of these services can contact ARS by visiting <https://ars.unc.edu>, calling 919-962-8300 or emailing ars@unc.edu, and should do so as early in the term as possible.

Course Schedule

This schedule is subject to revision. Readings and other assignments may be added, removed and/or adjusted at my discretion. Any such changes will be announced both in class and via email.

The primary textbook for this course is the Carnap Book (CB), with which all of the Carnap problem sets are integrated. It can be accessed freely at <https://carnap.io/book>.

Date	Reading/agenda	Assignments due
Thursday, 1/11	Introduction, go over syllabus, register for Carnap (no reading)	
Tuesday, 1/16	CB chapter 1	
Thursday, 1/18	CB chapter 1 (cont.)	
Tuesday, 1/23	CB chapter 2	Problem Set 1
Thursday, 1/25	CB chapter 2 (cont.)	Problem Set 2
Tuesday, 1/30	CB chapter 3	Problem Set 3
Thursday, 2/1	CB chapter 3 (cont.)	
Tuesday, 2/6	CB chapter 4	Problem Set 4
Thursday, 2/8	CB chapter 4 (cont.)	
Tuesday, 2/13	CB chapter 5	Problem Set 5
Thursday, 2/15	CB chapter 5 (cont.)	
Tuesday, 2/20	CB chapter 5 (cont.)	
Thursday, 2/22	Midterm Exam 1	Problem Set 6
Tuesday, 2/27	CB chapter 6	
Thursday, 3/1	CB chapter 6 (cont.)	
Tuesday, 3/6	CB chapter 7	Problem Set 7
Thursday, 3/8	CB chapter 7 (cont.)	
Tuesday, 3/13	Spring Break (no class/reading)	
Thursday, 3/15	Spring Break (no class/reading)	
Tuesday, 3/20	CB chapter 8	Problem Set 8
Thursday, 3/22	CB chapter 8 (cont.)	
Tuesday, 3/27	CB chapter 9	Problem Set 9
Thursday, 3/29	CB chapter 9 (cont.)	Problem Set 10
Tuesday, 4/3	CB chapter 9 (cont.)	Problem Set 11
Thursday, 4/5	Midterm Exam 2	Problem Set 12
Tuesday, 4/10	CB chapter 11	
Thursday, 4/12	CB chapter 11 (cont.)	
Tuesday, 4/17	CB chapter 12	Problem Set 15
Thursday, 4/19	CB chapter 12 (cont.)	Problem Set 16
Tuesday, 4/24	Catch-up day (no reading)	Problem Set 17
Thursday, 4/26	Exam review day (no reading)	
Tuesday, 5/1	Final exam from 8:00-11:00 AM	