PHIL 310
Introduction to Symbolic Logic

Last updated: 20 August 2023

Instructor Contact Information
Instructor Name and Preferred Title: Prof. Ben Caplan
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Office: 3075 Wescoe Hall
Office Hours: MW 1:00–2:00 PM, or by appointment

Class Time and Location
Class Time: MWF 2:00–2:50 PM
Class Location: 4047 Wescoe Hall
Semester: Fall 2023

Course Hours and Instructional Methods
Credit Hours: 3. Each credit hour corresponds to "a minimum of two hours of out-of-class student work each week for approximately fifteen weeks" (adapted from https://policy.ku.edu/registrar/credit-hour).

Instructional method: LEC. This is an in-person class. It will include lecture, in-class discussion, small-group activities, and group projects.

Course Description
An introduction to the theory and practice of elementary symbolic logic. Special emphasis will be placed upon the logical analysis of mathematical proof and upon a proof of the consistency of elementary logic.

Additional Course Description
We will study sentential and predicate logic. We will learn three types of skills: (*i*) how to symbolize English sentences (e.g. 'Meghan has beagles and Harry has a black Lab', 'Someone who has beagles is married to someone who has a black Lab') in various formal languages; (*ii*) how to interpret those formal languages; and (*iii*) how to do proofs in those formal languages. These skills are learned, and we will learn them by working through examples.

Learning Outcomes
This course satisfies Core Goal 1 Learning Outcome 1 (Critical Thinking) and Core Goal 3 (Breadth of Knowledge) for Arts and Humanities. After successful completion of this course, students will be able to analyze and evaluate assumptions, claims, and arguments; and they will be able to demonstrate basic competence in logical methods of reasoning, which are among the analytic methods used in the arts and humanities.

Course Materials

Terence Parsons's *An Exposition of Symbolic Logic: With Kalish–Montague Derivations*—otherwise known as *TerryText*—is available on Canvas (under "Syllabus, textbook, etc.").

We will use Logic 2010. The software can be downloaded (for free) from https://logiclx.humnet.ucla.edu/. You will need to use the software to submit homework assignments (starting with the second homework assignment). Information about how to install and use Logic 2010 is on Canvas (under "Logic 2010"). Logic 2010 runs on Macs and PCs but unfortunately not on Chromebooks. If you have trouble installing or running Logic 2010, please let me know.

You will need to bring an exam booklet with you to the midterm and the final. These can be purchased in the KU Bookstore (or the Hawk Shop in the Underground in Wescoe Hall).

Course Assignments and Requirements

10% of your grade will be based on homework. The remaining 90% of your grade will be based on two mini-tests, two group assignments, a midterm exam, and a final exam. The mini-tests, group assignments, and exams will cover the following six units: (1) symbolization in sentential logic, (2) truth-tables, (3) derivations in sentential logic, (4) symbolization in predicate logic, (5) countermodels, and (6) derivations in predicate logic.

Test, exam, or group assignment	Unit or material covered	Chapters in *TerryText*
Mini-test 1	(1) Symbolization in sentential logic	Chapter 1.1, 1.3 Chapter 2.1–2.3
Group assignment 1	(2) Truth-tables	Chapter 1.2 Chapter 2.1, 2.10, 2.11
Midterm	(1) Symbolization in sentential logic	[see above]
	(2) Truth-tables	[see above]
	(3) Derivations in sentential logic	Chapter 1.4–1.8, 1.10, 1.11 Chapter 2.4, 2.5, 2.9
Mini-test 2	(4) Symbolization in predicate logic	Chapter 3.1–3.3, 3.5 Chapter 4.1, 4.2
Group assignment 2	(5) Countermodels	Chapter 3.4, 3.10 Chapter 4.9
Final exam	(4) Symbolization in predicate logic	[see above]
	(5) Countermodels	[see above]
	(6) Derivations in predicate logic	Chapter 3.6–3.9 Chapter 4.3

There will be approximately 15 homework assignments (one per week, starting in Week 2). Your two lowest homework scores won't count towards your homework grade.

The mini-tests will be graded out of 17 or 18 points. The group assignments will be graded out of 10 points. The midterm and the final will have three sections, worth 10, 17, and 18 points, respectively.

Skill or unit	The points you earn will come from …	Percentage of final grade
Homework	all of the homework assignments, **except for** your two lowest homework scores	10%
(1) Symbolization in sentential logic	whichever of the following you score **highest** on: mini-test 1, section (1) of the midterm, mini-test 2, and section (4) of the final.	18%
(2) Truth-tables	whichever of the following you score **highest** on: group assignment 1, section (2) of the midterm, group assignment 2, and section (5) of the final.	10%
(3) Derivations in sentential logic	whichever of the following you score **highest** on: section (3) of the midterm and section (6) of the final.	17%
(4) Symbolization in predicate logic	whichever of the following you score **highest** on: mini-test 2 and section (4) of the final.	18%
(5) Countermodels	whichever of the following you score **highest** on: group assignment 2 and section (5) of the final.	10%
(6) Derivations in predicate logic	section (6) of the final.	17%

General Assignment Information

- All tests and exams are administered in person. All homework assignments and group assignments are secured on Canvas or in Logic 2010 with a username and password.
- All tests and exams are on the day indicated on the course schedule (on Canvas), unless indicated otherwise ahead of time.
- Further instructions for the group assignments will be provided on Canvas.

Evaluation Criteria and Grading Scale

Student Survey of Teaching
I always welcome feedback on what is working well and what could be improved. In addition, you will be asked to complete an end-of-semester, online Student Survey of Teaching, which will inform modifications to this course (and other courses that I teach) in the future.

Grading
All grades except homework grades will be posted on Canvas. All homework grades (except for the score on the first homework assignment, which will be posted on Canvas) will be available on the Logic Student Assignments & Scores page at https://logiclx.humnet.ucla.edu/Logic/Student/Course. You are strongly encouraged to check your scores regularly. Your final percentage grade will be calculated based on the highest number of points you earn for a particular skill (as indicated in the table on the previous page).

Given the nature of the grading scheme, your total grade will not be calculated on "Grades" on Canvas. To figure out what your total grade is, you can use the grade calculator (on Canvas under "Syllabus, textbook, etc."). (It's an Excel spreadsheet. You'll need to download it to use it. If you enter your scores, it will calculate your total grade.) Or just ask me, by email or during office hours.

Lateness Policies
With one possible exception noted below, late homework assignments won't be accepted. Unless you make arrangements with me beforehand, late group assignments won't be accepted. And, unless you make arrangements with me beforehand, you won't be able to take the mini-tests, the midterm, or the final exam for credit except on the scheduled dates. (This is in part to allow discussion of the homework assignments, the group assignments, the mini-tests, and the midterm as soon as possible.)

Here's the possible exception mentioned above: I reserve the right to count one or more late homework assignments if doing so would increase your grade from F to D– or from D+ to C–.

Questions about Homework
If you ever have any questions about any of problems on any of the homework assignments (either before or after they're due), feel free to ask during class, during office hours, or by email. If you are asking by email, it will often be helpful to attach a screenshot of the work you've done so far. Or, if you are asking during office hours or a meeting, it might be helpful to be able to show me your screen (e.g. by bringing a laptop to my office or by sharing your screen on Zoom). This will make it easier for me to provide you with specific advice.

Grading Scale[1]

From	To	Letter grade
93.50	100.00	A
90.00	93.49	A–
86.50	89.99	B+
83.50	86.49	B
80.00	83.49	B–
76.50	79.99	C+
73.50	76.49	C
70.00	73.49	C–
66.50	69.99	D+
63.50	66.49	D
60.00	63.49	D–
00.00	59.99	F

Incomplete Grades

You may be assigned an 'I' (Incomplete) grade if you are unable to complete some portion of the assigned coursework because of an unanticipated illness, accident, work-related responsibility, family hardship, or verified learning disability. An Incomplete grade is not intended to give you additional time to complete course assignments or extra credit unless there is indication that the specified circumstances prevented you from completing course assignments on time.

Attendance Policy

Please see the University Excused Absences policy (USRR 2.2.1) at https://policy.ku.edu/governance/USRR#excused.

Academic Success

I'm committed to making this class as accessible as possible. If you have any accommodation requests, please let me know as soon as possible.

Please see the Student Resources Page on the Academic Success website at https://academicsuccess.ku.edu/student-resources-0.

In addition to any policies and resources noted above, the KU Academic Success Student Resources website (https://academicsuccess.ku.edu/student-resources-0) provides links to KU Policies and Resources pertaining to academic misconduct, grading polices, harassment and discrimination, diversity and inclusion, mandatory reporting, equal opportunity and affirmative action, and student rights and responsibilities. Please visit the site to familiarize yourself with these policies and resources. If you have questions or concerns about any of these policies, statements, or resources, please let me know, or contact Student Affairs directly.

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[1] See Ben Eggleston, "Plus/Minus Grading," at http://www.benegg.net/plus-minus_grading.pdf.

Concealed Carry

If you carry a concealed handgun, familiarize yourself both with the relevant state and federal laws and with KU's weapons policy at https://concealedcarry.ku.edu/information.

Course Schedule

The first day of class is Monday, 21 August 2023. The last day of class is Wednesday, 6 December 2023. The final exam is Monday, 11 December 2023, from 1:30 PM to 4:00 PM.

There is no class on the following dates: Monday, 4 September 2023 (Labor Day); Friday, 8 September 2023 (family obligation); Monday, 25 September 2023 (Yom Kippur); Monday, 16 October 2023 (Fall Break); Wednesday, 22 November 2023 (Thanksgiving); Friday, 24 November 2023 (Thanksgiving). In addition, I will likely cancel one Friday class during the semester due to a professional obligation. If so, I will announce that class cancelation as soon as possible and at least one week in advance.

A detailed tentative schedule is available on Canvas (under "Syllabus, textbook, etc."). I reserve the right to make changes to the schedule as we go along; these changes will be reflected in an updated or revised version of the schedule on Canvas. Homework assignments will always be assigned at least three days in advance (e.g. available Friday, due Monday). You will always have at least one week to prepare for mini-tests and the midterm, and you will always have at least one week to complete group assignments.