

LPS 104: Intro to Logic (Fall 2019)

Tuesday/Thursday 2:00-3:20 PM SSL 171

Instructor:

Jeff Schatz (schatzj@uci.edu)

Office SST 759– Office hours: T/R 12:00-12:50 PM

Course Description:

Formal logic uses (relatively) simple formal systems to model natural language, allowing features of language use to be studied. While classical logic in many cases provides an exceptionally useful model of semantic phenomena, in other cases it has been found to be woefully inadequate: either failing to capture certain aspects of language altogether (such as mood or tense), or simply providing an erroneous model (for example, by incorrectly evaluating the English conditional). In response to these supposed shortcomings, a plethora of non-classical logical systems have been proposed to better model these aspects of natural language usage.

In this class, we will briefly introduce classical propositional logic, highlighting the supposed “paradoxes” of the classical conditional. We will then consider both systems that extend classical logic (normal and non-normal modal logics) and ones that reject portions of classical logic (intuitionistic logic, paraconsistent and relevant logics). Throughout this study, we will pay close attention to how well each system can model the actual usage of the English conditional. Additionally, we will examine philosophical questions related to the systems of logic under consideration, and ask what the existence of these non-classical systems means for a robust notion of logical consequence.

Required Texts:

An Introduction to Non-Classical Logic: From If to Is, 2nd Edition, Graham Priest, Cambridge University Press, Cambridge UK.

Course Outcomes:

- 1) Understand the semantics of systems of classical and non-classic logic, including modal logics, intuitionistic logic, and relevant logics.
- 2) Develop skills in deductive reasoning, using Tableaux style proofs to explore the relation of logical consequence in different logical systems.
- 3) Critically evaluate the ability of formal logical systems to effectively model aspects of (English) natural language.
- 4) Analyze philosophical puzzles and problems connected to non-classical logic.

Assignments/Evaluations:

- 1) Midterm and Final: The primary means of evaluation for the class will be a take-home midterm, planned to be distributed on Tuesday, Nov 5th (Week 6), as well as an in-class final exam. The exams will be heavily based on the biweekly homework assignments, with a combination of proof exercises and short answer philosophical questions. The midterm will be open book and open note; I will distribute a sheet of the proof rules for the final exam.
- 2) Biweekly Homework: There will be homework assignments due every 2 weeks in the course, submitted by the start of class on Thursdays of even numbered weeks (ie week 2, week 4, ...). There will also be an optional, extra credit homework assignment during finals week.

Grade Breakdown:

- 30% Midterm Exam
- 30% Final Exam
- 40% Weekly Homework Assignments

Policies:

Attendance- Class attendance is strictly mandatory.

Late Work- Late work will be docked 10% per day. For example: if a student submitted a homework assignment three days late, and that homework would have received a 90/100 if it were turned in on-time, the student would instead receive 60/100 on the assignment.

Extra Credit- There will be an opportunity for a small amount of extra credit during finals week. There will be no further opportunities for extra credit in this course.

Regrading Policy- All grades are final, and there is absolutely no regrading of assignments.

Academic Dishonesty and Plagiarism- The penalty for *any* violation of academic integrity -- including but not limited to plagiarism -- is failure for the course and a letter recording the violation sent to the Dean. Please acquaint yourself with UCI's academic integrity policy at <https://aisc.uci.edu/students/academic-integrity/index.php>.

Disabilities and Special Circumstances- I will make every attempt to accommodate special needs of students. If you need special accommodations, please contact myself and the Disability Services Center [(949) 824-7494].

Syllabus Revisions- The syllabus is liable to be changed as the course progresses. Please check it whenever questions arise throughout the next quarter.

Memorization- We will cover multiple systems of logic in this course. It is not expected that you memorize all the proof rules for these systems; the focus will instead be on understanding how to apply the rules in proofs. All necessary rules will be provided on the final exam.

Course Outline:

Date	Topic	Readings (from Priest)
Sept 26 th	Intro and Classical Semantics	1.1-1.3
Oct 1 st	Proof and Semantic Tableaux	1.4-1.5
Oct 3 rd	The Material Conditional	1.6-1.10
Oct 8 th	Possible Worlds Semantics	2.1-2.3
Oct 10 th	Tableaux for K	2.4
Oct 15 th	What are Possible Worlds?	2.5-2.8
Oct 17 th	Normal Modal Logics	3.1-3.3
Oct 22 nd	Modal Logics and Notions of Necessity	3.4-3.6 (NOT 3.6a/3.6b)
Oct 24 th	Modal Logics Continued	Review earlier material
Oct 29 th	Modal Logics Continued	Review earlier material
Oct 31 st	The Strict Conditional	4.5-4.7
Nov 5 th	Intuitionism	6.1-6.4
Nov 7 th	The Intuitionist Conditional	6.5-6.6
Nov 12 th	Many-valued Logics	7.1-7.4
Nov 14 th	Motivations for Truth Value Gaps and Gluts	7.5-7.10
Nov 19 th	First Degree Entailment	8.1-8.4 (NOT 8.4a)
Nov 21 st	Failures of Disjunctive Syllogism	4.8-4.9 and 8.5-8.6
Nov 26 th	Combining Modal and Many-Valued Logics	9.1-9.3
Nov 28 th	NO CLASS (Thanksgiving)	n/a.
Dec 3 rd	Relevant Conditionals	9.7.8-9.7.13 and Review
Dec 5 th	Philosophy of Logic: Must we be Pluralists?	Beall and Restall "Logical Pluralism" and Keefe "What Logical Pluralism Cannot Be" (Articles posted on website)