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1 Course Objectives

Some arguments prove their point beyond a shadow of a doubt; others are compelling but have possible loopholes; others are completely unconvincing. Some inferences are safe to be confident of; others could lead a reasoner astray. Some claims entail others, some are merely compatible with each other, and some contradict each other. Formal logic allows us to analyze these notions with more precision and rigor than natural language permits. We'll use an artificial language—propositional logic—to formulate notions of consistency, entailment, and proof. Logic provides the foundations for mathematics, computer science, artificial intelligence, linguistics, and analytic philosophy.

Logic governs deductive reasoning or proofs. This course will also cover non-deductive and informal reasoning, with a focus on probabilistic reasoning and fallacies.

2 Textbook and Software

The textbook for this course is *Language, Proof, and Logic*, 2nd ed. (*LPL*), by Barwise & Etchemendy. Note: this textbook *must not* be purchased used. Its software comes with a license that can only be used by one person. This software, with its individual license, is necessary to complete and submit your work. If you are unable to submit your work in the standard way, you will not receive credit.

The textbook comes with a CD with an individual registration ID on it, but CD drives will not be required. With your registration ID, you'll be able to register for the textbook and software at <https://ggweb.gradegrinder.net/gradegrinder/login>, and download the necessary software. **Remember to save your registration ID!** You are responsible for learning the course's software. The software has a significant learning curve! The textbook will walk you through how to use the software. You are strongly encouraged to complete the exercises you encounter in the reading that are labeled “You Try It.” These are designed to help familiarize students with the software.

All readings outside of *LPL* will be available for download on the course's [TritonEd](#) website.

For Thursday, Jan. 12, please read *LPL* pp. 1–11 and sections 1.1–1.4.

The first pset is due this coming Mon., Jan. 16, at noon. (Feel free to submit it earlier.)

3 Grading

- Weekly problem sets: 40% (8 psets × 5% each)
- Midterm exam: 25%
- Cumulative final exam: 35%

4 Problem sets

This course requires you to submit short weekly problem sets (“psets”). Problem sets will be due **the Monday** after the relevant material is discussed. Psets must be submitted by 12:00 noon. Extensions for problem sets will be granted at your TA’s discretion, but must be requested 24 hours in advance. Without an extension, late assignments will be deducted a point (i.e. 20% of the assignment) per day.

Logic problem sets should be completed using *LPL*’s various softwares and submitted using *LPL*’s Submit software. For instructions on use of these softwares, see the introduction of *LPL*. Submit will ask for your instructor’s name and email. Please submit your name and TA’s email address.

The course software allows you to check whether your problem sets are correct before submitting them. *Please take advantage of this option.* Exercises that are incorrect according to the LPL Grade Grinder will receive no credit, regardless of how close they are to correct submissions. It is your responsibility to ensure that your psets are submitted on time and correctly.

Psets must be completed and submitted independently. Working together constitutes cheating. If you have questions about the problem set, please discuss these in your section or in your TA’s office hours, or contact your TA.

5 Sections

This course will have regular discussion sections. These will usually be devoted to working through exercises and answering questions.

6 Academic Integrity

Please familiarize yourself with [university policies](#) on plagiarism, cheating, and academic integrity. Note that cheating and plagiarism need not be knowing or intentional to be penalizable. Any form of cheating or plagiarism will be reported immediately. Penalties for academic integrity infractions include failing the course, suspension, and expulsion from the university.

7 Tentative schedule

This schedule is subject to change.

Week	Topic	Reading	Assignment
Week 1	<i>Introduction</i>		pset 1 due
Jan. 10	introduction and syllabus		Jan. 16
Jan. 12	atomic sentences, course software	pp. 1–11 & 1.1–1.4	
Week 2	<i>Logical Proof & Truth Functions</i>		pset 2 due
Jan. 17	consequence and proof	2.1, 2.2	Jan. 23
Jan. 19	proof and the Fitch system	2.3–2.5	
Week 3	<i>Boolean Logic</i>		pset 3 due
Jan. 24	Boolean connectives	3.1–3.7	Jan. 30
Jan. 26	tautologies and logical truths	4.1	
Week 4	<i>Informal Boolean Logic</i>		pset 4 due
Jan. 31	consequence and equivalence	4.2–4.4	Feb. 6
Feb. 2	informal Boolean proofs	5.1, 5.2	
Week 5	<i>Formal Boolean Logic</i>		pset 5 due
Feb. 7	indirect proof	5.3–5.4	Feb. 13
Feb. 9	conjunction and disjunction	6.1, 6.2	
Week 6	<i>Conditionals</i>		pset 6 due
Feb. 14	negation and subproofs	6.3–6.5	Feb. 20
Feb. 16	conditionals	7.1–7.3, 7.5	
Week 7	<i>Conditional Proof</i>		
Feb. 21	conditional proofs	8.1, 8.2, 8.4	
Feb. 23	MIDTERM		
Week 8	<i>Non-deductive Reasoning</i>		pset 7 due
Feb. 28	induction and statistical generalization	t.b.a.	Mar. 6
Mar. 2	introduction to probabilistic reasoning	t.b.a.	
Week 9	<i>Probabilistic Reasoning</i>		pset 8 due
Mar. 7	Bayes' theorem and Bayes' rule	t.b.a.	Mar. 13
Mar. 9	fallacies of probabilistic reasoning	t.b.a.	
Week 10	<i>Fallacies</i>		
Mar. 14	causal reasoning	t.b.a.	
Mar. 16	review	t.b.a.	