LPS 30: Introduction to Symbolic Logic

Instructor:	Helen Meskhidze helen.meskhidze@uci.edu	TAs:
Lectures:	asynchronous	
Office hours:	MW 7-8:20 PM	
Zoom link:		

What's this course about?

The goal of this course is to provide you formal tools for evaluating arguments and to give you practice using these tools. We will learn how to translate sentences into symbolic logic and the rules of manipulating those sentences to see what they entail. By the end of this course, you will be able to employ the language of symbolic logic as well as understand its limitations.

This course fulfills the following general education requirements:

> Vb. Formal reasoning: Courses in this category focus on aspects of formal reasoning including symbolic logic, mathematical modeling, and algorithmic reasoning.

Refining your logical analysis skills is like refining your skills in a foreign language or a computer language: you need a lot of (reflective) practice! To succeed, you should treat this course and your time in discussion sections accordingly.

More specifically, the skills developed in this course are cumulative and include:

1. translating arguments from English into well-formed formulas of symbolic logic
2. evaluating the semantic validity of arguments in sentential logic using truth tables
3. evaluating the deductive validity arguments in sentential logic using a Fitch-style natural deduction system
4. using map models, Venn diagrams, and arrow models to evaluate arguments in quantified logic
5. evaluating the deductive validity arguments in quantified logic using a Fitch-style natural deduction system

What do I need to succeed?

Required text:
*   *Schaum's Outline of Theory and Problems of Logic* by Nolt, Rohatyn, and Varzi (2nd Ed.).

Supplemental texts (excerpts will be posted on our course page):
*   *for all x* by P. Magnus & T. Button (Open Education Resource available here).
*   *The Art of Logic in an Illogical World* by Eugenia Cheng

What is the structure of this course?

The content for this course will be broken into 4 main + 2 short supplemental modules.

> **Weekly***:* There will be a number of pre-recorded, synchronous lectures for each module that will be posted weekly. You will have a corresponding set of practice problems for those videos (8 total; due weekly; graded for completion; 2 lowest dropped). At the end of that week, I will post the solutions for the practice problems and a brief reflection about the solutions will be due with the following week's problems.
> I will also be posting an informal video about each week's assignments and expectations to keep us on track as we progress through the course.
> **At the end of each module:** There will be one problem set due at the end of each main module (totaling 4).
> **At the end of the course** (in lieu of a final exam!): You will choose 2 of 4 shorter modules and complete the corresponding assignments.

Course Policies

Academic Integrity

Any violation of academic integrity (including cheating) will result in an F for the course and letters sent to the appropriate deans. This course will follow the **UCI policy** on academic integrity.

Accessibility and Inclusivity.

Your well-being and success in this course are important to me! If you have any particular needs, concerns about the structure of the course, or concerns about your ability to succeed in the course, please visit me during office hours or, if necessary, at another arranged time.
Every student is entitled to a meaningful and stimulating learning experience. Please contact the Disability Services Center (DSC) to make the necessary arrangements. Finally, if you have a preferred name or pronoun besides that provided by the enrollment office, please let me know.

The grade break-down is:

- **60%** - 4 problem sets (15% each)

- **30%** - 8 weekly assignments (5% each; 80% completion, 20% reflection; lowest 2 will be dropped)

- **10%** - final choice of assignments (pick 2/4 modules and complete the corresponding assignments)

Late policy: Problem sets and weekly assignments will be accepted 24 hours late without penalty.

Weekly assignments will not be accepted more than 24 hours late as the solutions will be posted by then. However, the lowest 2 will be dropped.

Please contact me within 24 hours of the due date if you need an extension for the problem sets. Otherwise, problem sets more than 24 hrs late will be deducted 10% for each additional day they are late.

Regrades will only be considered for problem sets. If you wish to have a problem set regraded, you must submit a half-page explanation within 72 hours of receiving the grade.

Dates	Week Type	Topic	SLO	Required Readings (Schaum sections)	Supplementary Readings (*for all x chapters*)	Assessments
Week 1: 3/29 - 4/3	Topic into	Arguments forms, translations, logical connectives, truth tables	1, 2	3.1-3.4	2, 4, 5	☐ Week 1 check
Week 2: 4/4 - 4/10	Deeper dive	Well-formed formulas of sentential logic, more truth tables, semantic validity	2	3.5-3.6	6, 9-11	☐ Week 1 reflection ☐ Week 2 check ☐ **4/9: Problem set 1**
Week 3: 4/11- 4/17	Topic into	Deductive validity, basic proof rules, subproofs, special proofs	3	4.1-4.3	15-16,	☐ Week 2 reflection ☐ Week 3 check
Week 4: 4/18 - 4/24	Deeper dive	Derived proof rules, comparison of truth tables & proofs	3	4.4-4.5	18, 20	☐ Week 3 reflection ☐ Week 4 check ☐ **4/23: Problem set 2**
Week 5: 4/25 - 5/1	Topic into	Basics concepts of quantified logic: objects, predicates, and variables; translations, well-formed formulas of quantified logic	1	6.1-6.4		☐ Week 4 reflection ☐ Week 5 check
Week 6: 5/2 - 5/8	Deeper dive	Map models, Venn diagrams, and arrow models with quantified logic	4	5.2		☐ Week 5 reflection ☐ Week 6 check
Week 7: 5/9 - 5/15	Deeper dive; topic intro	Countermodels; Basic proof rules of quantified logic	4,5	7.1-7.3		☐ Week 6 reflection ☐ Week 7 check ☐ **5/14: Problem set 3**
Week 8: 5/16 - 5/22	Deeper dive	Quantifier equivalences	5	7.4		☐ Week 7 reflection ☐ Week 8 check
Week 9: 5/23 - 5/29	Review					☐ Week 8 reflection ☐ **5/28: Problem set 4**
Week 10: 5/30 - 6/4 date		Bonus Content		tbd— based on your choice of module		