PHIL 150E - Logic in Action

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Overview

A new introduction to logic, covering propositional, modal, and first-order logic. Highlights connections with philosophy, mathematics, computer science, linguistics, and neighboring fields. Based on the open source logic course *Logic in Action*, available online at http://www.logicinaction.org/. Fulfills the undergraduate Philosophy major logic requirement, the undergraduate Symbolic Systems major Discrete Fundamentals - Logic and Computational Theory requirement, and the Math GER.

Requirements

Homework: seven problem sets due on Mondays in class, assigned on the previous Wednesday, each worth 10% of final grade. No late homework.

Exams: one take-home midterm (due April 29) and one take-home final exam (due June 12), each worth 15% of final grade.

Schedule

Week 1 - Monday, April 1 - Course Overview

      Reading: none.

Week 1 - Wednesday, April 3 - Prelminaries: Sets, Relations, Functions, etc.

      Reading: Chapter 1, section 3.3 of Chapter 3 and Appendix of Logic in Action.

Week 1 - Friday, April 5 - Preliminaries: Sets, Relations, Functions, etc.

Reading: Chapter 1, section 3.3 of Chapter 3 and Appendix of Logic in Action.

PART I: PROPOSITIONAL LOGIC

Week - 2 Monday, April 8 - Propositional Logic

Reading: Sections 2.1 - 2.4 in Chapter 2 of Logic in Action.

Homework 1 Due

Week 2 - Wednesday, April 10 - Propositional Logic

Reading: Sections 2.5 in Chapter 2 of Logic in Action.

Week 2 - Friday, April 12 - Propositional Logic

Reading: Section 2.6 in Chapter 2 of Logic in Action.

Week 3 - Monday, April 15 - Propositional Logic

Reading: Section 9.1 in Chapter 9 of Logic in Action.

Homework 2 Due

Week 3 - Wednesday, April 17 - Propositional Logic

Reading: Section 9.1 in Chapter 9 of Logic in Action.

Week 3 - Friday, April 19 - Propositional Logic

Reading: Review Chapter 2 of Logic in Action.

Week 4 - Monday, April 22 - Propositional Logic

Reading: Handout 2

Homework 3 Due

PART II: INTERLUDE

Week 4 - Wednesday, April 24 - Logic and Language

Reading: Sections 3.1, 3.2, 3.4, 3.5, 3.6, and 3.8 in Chapter 3 of Logic in Action.

Week 4 - Friday, April 26 - Logic and Language

Reading: Handout 3

PART III: MODAL AND DYNAMIC LOGIC

Week 5 - Monday, April 29 - Modal Logic

Reading: Sections 5.1-3 in Chapter 5 of Logic in Action.

Take-Home Midterm Due

Week 5 - Wednesday, May 1 - Modal Logic

Reading: Sections 5.4-5 in Chapter 5 of Logic in Action.

Week 5 - Friday, May 3 - Modal Logic

Reading: Sections 5.6-7 in Chapter 5 of Logic in Action.

Week 6 - Monday, May 6 - Modal Logic

Reading: Sections 5.6-7 in Chapter 5 of Logic in Action.

Homework 4 Due

Week 6 - Wednesday, May 8 - Logic and Action

Reading: Sections 5.8-9 in Chapter 5 of Logic in Action.

Week 6 - Friday, May 10 - Logic and Action

Reading: Sections 6.11 in Chapter 6 of Logic in Action.

PART IV: FIRST-ORDER LOGIC

Week 7 - Monday, May 13 - First-Order Logic - Translations & Patterns

Reading: Sections 4.1-3 in Chapter 4 of Logic in Action.

Homework 5 Due

Week 7 - Wednesday, May 15 - First-Order Logic - Syntax

Reading: Sections 4.5 in Chapter 4 of Logic in Action.

Week 7 - Friday, May 17 - First-Order Logic - Semantics

Reading: Sections 4.4 and 4.6 in Chapter 4 of Logic in Action.

Week 8 - Monday, May 20 - First-Order Logic - Validity & Consequence

Reading: Section 4.7 in Chapter 4 of Logic in Action.

Week 8 - Wednesday, May 22 - First-Order Logic - Proof

Reading: Section 4.8 in Chapter 4 and 9.2 (not 9.2.1) in Chapter 9 of Logic in Action.

Homework 6 Due

Week 8 - Friday, May 24 - First-Order Logic - Identity & Functions

Reading: Section 4.9 in Chapter 4 and Section 9.2.1 in Chapter 9 of Logic in Action.

Week 9 - Monday, May 27 - Memorial Day (No Class)

Week 9 - Wednesday, May 29 - First-Order Logic - Arithmetic

Reading: Section 4.10 in Chapter 4 and Section 9.3 in Chapter 9 of Logic in Action.

Homework 7 Due

Week 9 - Friday, May 31 - No Class

Instead, attend at least one talk at the CSLI Workshop on Logic and Rationality!

Week 10 - Monday, June 3 - First-Order Modal Logic

Reading: TBA

Week 10 - Wednesday, June 5 - Set Theory and Higher-Order Logic

Reading: TBA

CSLI Workshop Talk Summary Due