PHIL 151/251 - Metalogic

Tues/Thurs 12:50-2:05, Mitchell Earth Sciences B67

Instructor:
Thomas Icard (icard@stanford.edu)
Office: 90-92A Office hours: Thursday 2:15-4:15pm

TAs:
Adwait Parker (adwait@stanford.edu)
Office: 100-102K Office hours: Monday, 9am-11am
Section Time: 5:20-6:20 Location: 90-92Q

Yafeng Wang (ywang11@stanford.edu)
Office: 90-92N Office hours: Monday 1:00-2:00pm, Friday 9:30-10:30am.
Section Time: Thursday, 5:45-6:45pm Location: 100-101K

Overview


Requirements

Homework: We will have weekly problem sets, due each Tuesday at the start of class. Each student has 3 free late (calendar) days. After that, 10% will be deducted for every late day. Homework that is turned in after the start of class will be considered late.

Exams: There will be one take-home final, due March 18.

Grade Breakdown: 72%: homework, 23%: exam, 5%: participation in class and section.

Course email address: phil151-win1415-staff@lists.stanford.edu.

Honor Code: Some of the concepts and techniques in this course will be challenging, and you are very much encouraged to discuss the material with your fellow students, including homework questions and final questions. However, when writing up your responses (proofs, etc.), collaboration is not allowed, and the Honor Code will be strictly observed.
Schedule

PART I: PRELIMINARIES

Week 1 - Tuesday, January 6 - Course Overview and Background
   Reading: pp. 1-7.

Week 1 - Thursday, January 8 - Basic Set Theory
   Reading: pp. 8-9.

PART II: SENTENTIAL (A.K.A. PROPOSITIONAL, BOOLEAN) LOGIC

Week 2 - Tuesday, January 13 - Review of Sentential Logic
   Reading: pp. 11-27.
   Homework 1 due

Week 2 - Thursday, January 15 - Induction and Recursion
   Reading: pp. 34-44.

Week 3 - Tuesday, January 20 - Sentential Connectives
   Reading: pp. 45-52.
   Homework 2 due

Week 3 - Thursday, January 22 - Compactness Theorem
   Reading: pp. 59-60.

Week 4 - Tuesday, January 27 - Computability and Effectiveness
   Reading: pp. 61-65
   Homework 3 due

PART III: FIRST-ORDER LOGIC

Week 4 - Thursday, January 29 - First-Order Languages
   Reading: pp. 67-79.

Week 5 - Tuesday, February 3 - First-Order Models
   Reading: pp. 80-89
Homework 4 due

Week 5 - Thursday, February 5 - More on Models
   Reading: Review.

Week 6 - Tuesday, February 10 - Definability and Homomorphisms
   Reading: pp. 90-99.
   Homework 5 due

Week 6 - Thursday, February 12 - Proofs and Deductions

Week 7 - Tuesday, February 17 - More Proofs and Deductions
   Reading: pp. 116-128.
   Homework 6 due

Week 7 - Thursday, February 19 - Soundness
   Reading: pp. 131-134.

Week 8 - Tuesday, February 24 - Completeness Part I
   Reading: pp. 135-139.
   Homework 7 due

Week 8 - Thursday, February 26 - Completeness Part II
   Reading: pp. 140-145.

Part IV: Basic Model Theory

Week 9 - Tuesday, March 3 - Finite Models
   Reading: pp. 147-151.
   Homework 8 due

Week 9 - Thursday, March 5 - Löwenheim-Skolem Theorem
   Reading: pp. 151-155.

Week 10 - Tuesday, March 10 - Theories
   Reading: pp. 155-160.
   Homework 9 due

Week 10 - Thursday, March 12 - Summary, Recap, and Preview

Take-Home Final due Wednesday, March 18 at noon.