PHI 380-0--Symbolic Logic
2-3:15 TR, Bareis 310
Spring 2025
Dr. Close

ASSIGNMENTS

Rev. 23-Apr-2025

Instructions: Although basically stable, this document is tentative. Complete all reading and homework assignments shown *prior to* that day's lecture (Lecture 1 excepted).

Doing the Homework: Since the answers to even-numbered exercises are given, often only the odds are assigned. This does not mean that you shouldn't do the evens! Just do them as needed. I recommend that you always start with an even exercise or two and check your work. Leave some space for missing problems in your homework ring binder so that you can complete them as needed or copy exercises from lecture. Most proofs can be checked using the free *LogicCoach* software.

Lecture Date	Topics	Readings and Assignments
Lecture 1 Jan. 9	Introduction to Philosophy; Introduction to Logic; Definition of Argument; Inference Indicators	• **Read** Robert Audi, *Philosophy: A Brief Guide for Undergraduates* by the end of the day. • Explore the course Canvas by the end of the day.
Lecture 2 Jan. 14	Deduction, Induction, Truth, Validity, Soundness, and Consistency	• **Read** Hausman, Boardman, and Kahane, *Logic and Philosophy*, 13th ed. (hereafter, "*HBK*")**,** Preface; Ch. 1 ("Introduction"), all sections, pp. 1-15. • **Read** *Close*, "Definitions of Argument" and "Inference Indicators" (paper and Canvas hand-outs) • **Homework #1:** ➢ Exercise 1-1 (pp. 3-4), all; ➢ Exercise 1-2 (p. 10), #1-3; ➢ Exercise 1-3 (p. 14), all (*really important exercises!)*; ➢ Learn Ch. 1 Key Terms; Review Chapter 1 slides.
Lecture 3 Jan. 16	Atomic and Compound Sentences; Truth-functions; Negation, Conjunction, Disjunction, Conditionals, Biconditionals	• **LECTURE CANCELLED** • **Read** *HBK*, Ch. 2 ("Symbolizing in Sentential Logic"), Sections 1–10, pp. 19-33. • **Homework #2:** ➢ Exercise 2-1 (p. 24), all; ➢ Exercise 2-2 (p. 28), all; ➢ Exercise 2-3 (p. 31), all; ➢ Exercise 2-4 (pp. 32-33), all.
Lecture 4 Jan. 21	Symbolizing complex sentences, conditional idioms and other idiomatic constructions	• **Read** *HBK*, Ch. 2, Sections 11–15, pp. 33-50. • **Read** *Close*, "Understanding Conditional Statements" (paper and Canvas hand-out) • **Homework #3:** ➢ Exercise 2-5 (pp. 40-41), all; ➢ Exercise 2-6 (pp. 44-45), all; ➢ Exercise 2-7 (pp. 45-46), all; ➢ Exercise 2-8 (pp. 46-47), 1-23 odds; ➢ Exercise 2-9 (p. 48), 3, 9; ➢ Exercise 2-10 (p. 48), all; ➢ Learn Ch. 2 Key Terms; Review Chapter 2 slides ➢ Exercises on "Understanding Conditional Statements," all. ➢ **Quiz 1** (covers material from Lectures 1-3): **POSTPONED to January 23.**

Lecture 5 Jan. 23	Truth Tables	• **Read** *HBK*, Ch. 3 ("Truth Tables"), Sections 1–2, pp. 51-60. • **Read** *Close*, "Truth Table Proofs of Validity and Invalidity" (paper and Canvas hand-out) • **Homework #4:** ➢ Exercise 3-1 (p. 55), all; ➢ Exercise 3-2 (p. 55), all; ➢ Exercise 3-3 (p. 59-60), odds.
Lecture 6 Jan. 28	Truth Tables cont.; Logical Equivalence; Tautologies, Contradictions, and Contingent Sentences	• **Read** *HBK*, Ch. 3, Sections 3–4, pp. 61-67. • **Homework #5:** ➢ Exercise 3-4 (p. 60), odds; ➢ Exercise 3-5 (p. 60), all
Lecture 7 Jan. 30	Short-cut validity test; Truth Tables and Semantic Validity	• **Read** *HBK*, Ch. 3, Sections 5–8, pp. 68-75. • **Homework #6:** ➢ Exercise 3-6 (p. 66), odds; ➢ Exercise 3-7 (p. 67), all; ➢ Exercise 3-8 (p. 70), all
Lecture 8 Feb. 4	Intro. to Natural Deduction; PARC Rules; Valid Argument Forms (Modus Ponens, Modus Tollens, Disjunctive Syllogism, Hypothetical Syllogism) Invalid Argument Forms (Fallacy of Affirming the Consequent, Fallacy of Denying the Antecedent)	• **Read** *HBK*, Ch. 3, Sections 9–10, pp. 77-83. • **Read** *HBK* Ch. 4 ("Proofs"), Sections 1–3, pp. 84-89. • **Read** *Close*, "Common Argument Forms," "PARC System of Deductive Rules" and "Guidelines for PARC Proofs" (paper and Canvas hand-outs) • **Homework #7:** ➢ Exercise 3-9 (p. 71), all; ➢ Exercise 3-10 (p. 76), all; ➢ Exercise 3-11 (p. 77), all; ➢ Exercise 3-12 (p. 81), problems 3, 4, and 6; ➢ Exercise 3-13 (p. 82), all; ➢ Learn Ch. 3 Key Terms; Review Chapter 3 slides.
Lecture 9 Feb. 6	Rule A and Rules of Inference	• **Read** *HBK*, Ch. 4, Sections 4–5, pp. 91-93. • **Homework #8:** ➢ Exercise 4-1 (pp. 89-90), all; ➢ Exercise 4-2 (p. 90), all • **Quiz 2** (covers material from Lectures 4-8)
Lecture 10 Feb. 11	Rule R and rules of equivalence	• **Read** *HBK*, Ch. 4, Section 6, pp. 94-98. • **Homework #9:** ➢ Exercise 4-3 (pp. 93-94), all; ➢ Exercise 4-4 (pp. 98-99), all; ➢ Exercise 4-5 (pp. 99-100), problems 1-9, odds.
Lecture 11 Feb. 13	Direct proofs, continued	• **NO CLASSES—CAMPUS CLOSED FOR WEATHER** • **Read** *HBK*, Ch. 4, Sections 7–10, pp. 100-105. • **Homework #10:** ➢ Exercise 4-5 (pp. 99-100), problems 11, 13, 15, 17, 19 ➢ Exercise 4-6 (pp. 101-102, odds).

Lecture 12 Feb. 18	Direct proofs, continued	• **Read** *HBK*, Ch. 4, Sections 11–12, pp. 107-117. • **Homework #11:** ➢ Exercise 4-7 (pp. 105-106), odds; ➢ Exercise 4-8 (p. 107), all; ➢ Exercise 4-9 (p. 110), all; ➢ Exercise 4-10 (p. 112), odds; ➢ Exercise 4-11 (pp. 114-115), problems 1, 5, 9; ➢ Exercise 4-12 (p. 115), odds; ➢ Exercise 4-13 (pp. 115-116), problems 5, 9, 13; ➢ Learn Ch. 4 Key Terms; Review Chapter 4 slides. ➢ **Quiz 3** (covers material from Lectures 9-11): **POSTPONED to February 20**.
Lecture 13 Feb. 20	Rule C and conditional proofs	• **Read** *HBK*, Ch. 5 ("Conditional and Indirect Proofs"), Section 1, pp. 118-125. • **Read** *Close*, "Using PARC's Rule C for Conditional and Indirect Proofs" (paper and Canvas hand-out) • **Homework #12:** ➢ Exercise 5-1 (p. 125), all

Lecture 14 Feb. 25	Rule C and indirect proofs	• **Read** *HBK*, Ch. 5, Section 2, pp. 126-131. • **Homework #13:** ➢ Exercise 5-2 (p. 125), 5, 9, 13.
Lecture 15 Feb. 27	Conditional and indirect proofs, continued	• **Homework #14:** ➢ Exercise 5-3 (p. 129), all; ➢ Exercise 5-4 (p. 130), all. • **Quiz 4** (covers material from Lectures 12-14): **POSTPONED to March 11.**

Lecture 16 Mar. 11	Conditional and indirect proofs, continued; Completeness and soundness	• **Read** *HBK*, Ch. 5, Sections 3–8, pp. 131-141. • **Homework #15:** ➢ Exercise 5-5 (pp. 131-132), odds; ➢ Exercise 5-6 (p. 133), odds; ➢ Learn Ch. 5 Key Terms; Review Chapter 5 slides.
Lecture 17 Mar. 13	Introduction to predicate logic; quantificational translations	• **Read** (carefully!) *HBK*, Ch. 7 ("Predicate Logic Symbolization"), Sections 1-7, pp. 157-171. • **Homework #16:** ➢ Exercise 7-1 (p. 159), all; ➢ Exercise 7-2 (pp. 161-162), all; ➢ Exercise 7-3 (p. 165), all; ➢ Exercise 7-4 (pp. 165-166), all; ➢ Exercise 7-5 (p. 167), all; ➢ Exercise 7-6 (p. 171), odds; ➢ Exercise 7-7 (p. 172), odds.

Lecture 18 Mar. 18	Restricted domain quantificational expansions	• **Read** *HBK*, Ch. 7, Sections 8-9, pp. 172-179. • **Homework #17:** ➢ Exercise 7-8 (p. 175), odds; ➢ Exercise 7-9 (p. 177), odds; ➢ Exercise 7-10 (p. 178), odds; ➢ Exercise 7-11 (p. 178), #1; ➢ Learn Ch. 7 Key Terms; Review Chapter 7 slides. • **Quiz 5** (covers material from Lectures 15-17): **POSTPONED to March 20.**
Lecture 19 Mar. 20	Validity and consistency; quantificational proofs	• **Read** *HBK*, Ch. 8 ("Predicate Logic Semantics"), Sections 1-5, pp. 180-187. • **Read** *HBK*, Ch. 9 ("Predicate Logic Proofs"), Sections 1-2, pp. 188-196. • **Homework #18:** ➢ Exercise 8-2 (p. 184), #3; ➢ Exercise 8-3 (p. 185), #5; ➢ Exercise 9-1 (pp. 195-196), all; ➢ Learn Ch. 8 Key Terms; Review Chapter 8 slides.

Lecture 20 Mar. 25	HBK quantificational rule restrictions; PARC quantificational rules	• **Read** *HBK*, Ch. 9, Sections 3-6, pp. 196-212. • **Read** *Close*, "PARC Quantificational Rules" (paper and Canvas hand-out) • **Homework #19:** ➢ Exercise 9-2 (p. 200), all; ➢ Exercise 9-3 (pp. 206-207), all; ➢ Exercise 9-4 (p. 210), all; ➢ Exercise 9-5 (p. 211), all; ➢ Learn Ch. 9 Key Terms; Review Chapter 9 slides.

Lecture 21 Apr. 1	Introduction to relational logic; overlapping quantifiers	• **Read** *HBK*, Ch. 10 ("Relational Predicate Logic"), Sections 1-5, pp. 213-224. • **Read** *Close*, "Tips for Constructing HBK Quantificational Proofs" (paper and Canvas hand-out • **Homework #20:** ➢ Exercise 10-1 (pp. 214-215), odds; ➢ Exercise 10-2 (p. 218), all; ➢ Exercise 10-3 (pp. 219-220), 1-12. • **Quiz 6** (covers material from Lectures 18-20): **POSTPONED to April 3**
Lecture 22 Apr. 3	Relational translation continued; invalidity and consistency	• **Read** *HBK*, Ch. 10, Sections 6-8, pp. 226-235. Study the examples on pp. 223-224 carefully. • **Homework #21:** ➢ Exercise 10-4 (p. 221), all; ➢ Exercise 10-5 (p. 224), all; ➢ Exercise 10-6 (p. 225), all.

Lecture 23 Apr. 10	Translation continued; Relational proofs	• **Read** *HBK*, Ch. 10, Sections 9-11, pp. 236-242. • **Homework #22:** ➢ Exercise 10-7 (pp. 225-226), all; ➢ Exercise 10-8 (p. 227), odds

Lecture 24 Apr. 15	Relational proofs	• **Carefully** review *HBK*, Ch. 10, Section 7. Study the examples on p. 232. • **Homework #23:** ➢ Exercise 10-9 (pp. 232-233), all; ➢ Exercise 10-10 (p. 235), odds; ➢ Exercise 10-11 (p. 236), #2, 3, 5, 6, 8, 9, 12, 13; ➢ Exercise 10-12 (p. 239), #5, 13. ➢ Learn Ch. 10 Key Terms; Review Chapter 10 slides. • **Quiz 7** (covers material from Lectures 21-23): **POSTPONED to April 17.**
Lecture 25 Apr. 17	First-order logic with identity definite descriptions	• **Read** *HBK*, Ch. 13 ("Identity, Higher-Order Logics, and Sets"), Sections 1-3, pp. 269-280. • **Homework #24:** ➢ Exercise 13-1 (p. 271), evens; ➢ Exercise 13-2 (p. 274), evens.

Lecture 26 Apr. 22	First-order logic with identity; properties of relations; higher-order logics; sets and Russell's Paradox	• **Read** *HBK*, Ch. 13 ("Identity, Higher-Order Logics, and Sets"), Sections 4-9, pp. 280-288. • **Homework #25:** ➢ Exercise 13-3 (p. 276), evens; ➢ Exercise 13-4 (p. 280), evens; • Learn Ch. 13 Key Terms; Chapter 13 slides.
Lecture 27 Apr. 24	Logical paradoxes; semantic paradoxes; informal fallacies	• **Read** *HBK*, Ch. 14 ("Philosophical Problems of Symbolic Logic"), Section 3, pp. 300-306. • **Read** *Close*, "Common Fallacies: An Annotated Guide" (paper and Canvas hand-out) • **Read** *Close*, "Common Fallacies: A Brief Guide" (paper and Canvas hand-out)

Lecture 28 Apr. 29	Logic puzzles; Logic pedigree; Final exam review	• **Final Exam Review**

Do not hesitate to call me at home (419-927-2514) or e-mail me (dclose@heidelberg.edu) if you need help.