The University of Western Ontario
Department of Philosophy
Undergraduate Course Outline 2012–2013

Philosophy 2020: Basic Logic

Fall/Winter Term 2012/13
Tuesday/Thursday 11:30–12:30
Room: Tues: MC-105B, Thurs: NS-7

Instructor: Emerson Doyle
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Office Hours: STvH4136, Thur 12:30–2:00

Description

This course is an introduction to informal/formal logic. We will learn how to assess and analyze arguments, as well as study the various methods of reasoning used in natural language, the sciences, mathematics, and in application to computer "thinking." We will also consider the application of logic to taking admission tests (i.e., the GRE, LSAT, etc.). The course presumes no previous knowledge of logic, and is designed for students not planning further studies in logic or philosophy.

Text

- Irvin M. Copi, Carl Cohen, & Kenneth McMahon (2011). *Introduction to Logic*, 14th ed. Boston: Prentice Hall. (Available at the Bookstore)
- Various supplementary readings to be made available on WebCT.

Requirements

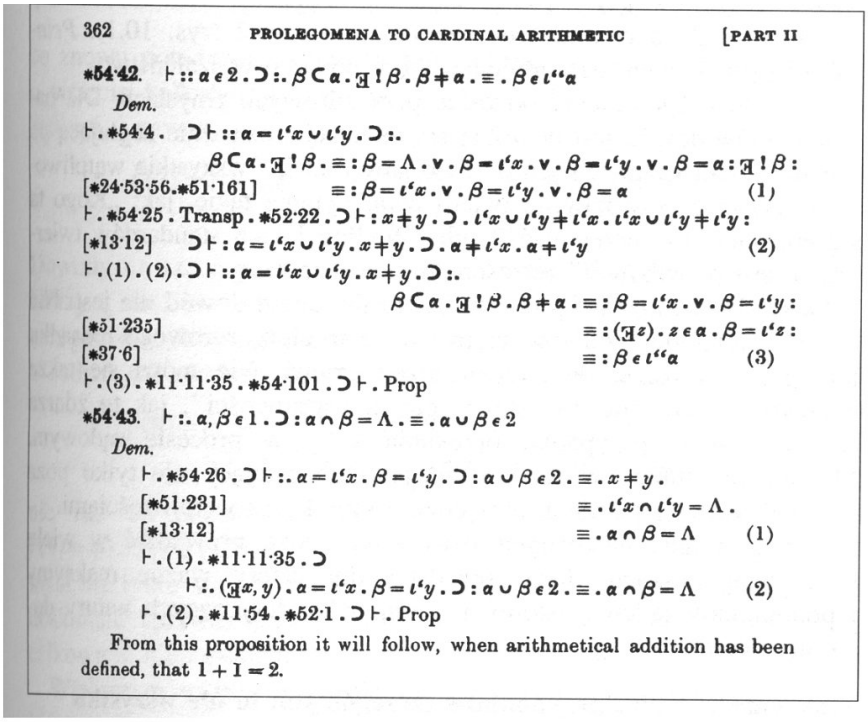
- Assignments: 40% (4 per semester at 5% each)
- Mid-Year Exam: 25% (during the December 2012 exam period)
- Final Exam: 35% (during the Spring 2013 exam period)

Assignments should be submitted *at the beginning of class* on the due date. **Late assignments will be penalized *10% per day***, including weekends and holidays. Exceptions will be made exclusively at the discretion of the instructor (I'll be more understanding if you come to see me *before* the assignment is due).

Students are also expected to **regularly complete textbook exercises** and to reflect on the ideas discussed in class. In my experience, students *cannot* do well in the course without devoted practice outside the classroom.

Objectives

By the end of the course, students should have some knowledge of how to read this:



362 PROLEGOMENA TO CARDINAL ARITHMETIC [PART II

*54·42. $\vdash :: \alpha \in 2 . \supset :. \beta \subset \alpha . \exists ! \beta . \beta \neq \alpha . \equiv . \beta \in \iota`` \alpha$

Dem.

$\vdash . *54·4 . \quad \supset \vdash :: \alpha = \iota`x \cup \iota`y . \supset :.$

$\beta \subset \alpha . \exists ! \beta . \equiv : \beta = \Lambda . \vee . \beta = \iota`x . \vee . \beta = \iota`y . \vee . \beta = \alpha : \exists ! \beta :$

[*24·53·56.*51·161] $\equiv : \beta = \iota`x . \vee . \beta = \iota`y . \vee . \beta = \alpha$ (1)

$\vdash . *54·25 . \text{Transp} . *52·22 . \supset \vdash : x \neq y . \supset . \iota`x \cup \iota`y \neq \iota`x . \iota`x \cup \iota`y \neq \iota`y :$

[*13·12] $\supset \vdash : \alpha = \iota`x \cup \iota`y . x \neq y . \supset . \alpha \neq \iota`x . \alpha \neq \iota`y$ (2)

$\vdash . (1) . (2) . \supset \vdash :: \alpha = \iota`x \cup \iota`y . x \neq y . \supset :.$

$\beta \subset \alpha . \exists ! \beta . \beta \neq \alpha . \equiv : \beta = \iota`x . \vee . \beta = \iota`y :$

[*51·235] $\equiv : (\exists z) . z \in \alpha . \beta = \iota`z :$

[*37·6] $\equiv : \beta \in \iota`` \alpha$ (3)

$\vdash . (3) . *11·11·35 . *54·101 . \supset \vdash . \text{Prop}$

*54·43. $\vdash :. \alpha, \beta \in 1 . \supset : \alpha \cap \beta = \Lambda . \equiv . \alpha \cup \beta \in 2$

Dem.

$\vdash . *54·26 . \supset \vdash :. \alpha = \iota`x . \beta = \iota`y . \supset : \alpha \cup \beta \in 2 . \equiv . x \neq y .$

[*51·231] $\equiv . \iota`x \cap \iota`y = \Lambda .$

[*13·12] $\equiv . \alpha \cap \beta = \Lambda$ (1)

$\vdash . (1) . *11·11·35 . \supset$

$\vdash :. (\exists x, y) . \alpha = \iota`x . \beta = \iota`y . \supset : \alpha \cup \beta \in 2 . \equiv . \alpha \cap \beta = \Lambda$ (2)

$\vdash . (2) . *11·54 . *52·1 . \supset \vdash . \text{Prop}$

From this proposition it will follow, when arithmetical addition has been defined, that $1 + 1 = 2$.

Figure 1: Russell and Whitehead finally *prove logically* that $1 + 1 = 2$.

and understand its significance—**Awesome!** Students should also be able to out-logic their friends. More seriously, successful students will acquire basic skills for the analysis of formal and informal inferences, everyday arguments, and simple statistical arguments. These skills will be directly transferable to reading/writing/test-taking in other university courses, and in everyday life.

Department Policies

The **Department of Philosophy Policies and Guidelines**, which govern the conduct, standards, and expectations for student participation in Philosophy courses,are available in the Undergraduate section of the Department of Philosophy website at http://uwo.ca/philosophy/undergraduate/policies.html. It is your responsibility to understand the policies set out by the Senate and the Department of Philosophy, and thus ignorance of these policies cannot be used as grounds of appeal.

Schedule

***Please be advised that the reading list is tentative.**

Fall Semester

Part 1: Introducing a Logical Point of View

Week 1 (Sept. 6)	• No assigned readings.
Week 2 (Sept. 11, 13)	• Copi, pp. xxi–xxii, "A Very Brief History of Logic" • Lewis Carroll, *What the Tortoise Said to Achilles*
Week 3 (Sept. 18, 20)	• Copi, Chapter 1

Part 2: Language and Argumentation

Week 4 (Sept. 25, 27)	• Copi, §2.1–2.3
	Assignment 1 Due September 27th
Week 5 (Oct. 2, 4)	• Copi, §2.4 • Copi, Appendix, "Graduate-Level Admission Tests"
Week 6 (Oct. 9, 11)	• Copi, §3.1–3.6 • Douglas Hofstadter, "Intensionality and Extensionality"
	Assignment 2 Due October 11th
Week 7 (Oct. 16, 18)	• Copi, §4.1–4.6 • Bertrand Russell, *Vagueness*

Part 3: Propositional Logic

Week 8 (Oct. 23, 25)	• Copi, §8.1–8.3
	Assignment 3 Due October 25th
Week 9 (Oct. 30, Nov. 1)	• Copi, §8.4–8.7
Week 10 (Nov. 6, 8)	• Copi, §8.8–8.10
Week 11 (Nov. 13, 15)	• Copi, §9.1–9.4
Week 12 (Nov. 20, 22)	• Copi, §9.5–9.8
	Assignment 4 Due November 22th
Week 13 (Nov. 27, 29)	• Copi, §9.9–9.11
Week 14 (Dec. 4)	• Review
	Mid-Year Exam scheduled by Registrar's Office

Winter Semester

Part 4: Aristotelian Logic

Week 15 (Jan. 8, 10)	• Copi, §5.1–5.4
Week 16 (Jan. 15, 17)	• Copi, §5.5–5.8
Week 17 (Jan. 22, 24)	• Copi, §6.1–6.5

Part 5: Predicate Logic

Week 18 (Jan. 29, 31)	• Copi, §10.1–10.4
	Assignment 5 Due January 31st
Week 19 (Feb. 5, 7)	• Copi, §10.5
Week 20 (Feb. 12, 14)	• Copi, §10.6–10.7
Week 21 (Feb. 19, 21)	• **No Class—Reading Week!** (thank science!)

Part 6: Inductive Logic and Scientific Inferences

Week 22 (Feb. 26, 28)	• Copi, §11.1–11.4
	Assignment 6 Due February 28th
Week 23 (Mar. 5, 7)	• Copi, §12.1–12.5
Week 24 (Mar. 12, 14)	• Copi, §14.1–14.3
Week 25 (Mar. 19. 21)	• Copi, §13.1–13.4
	Assignment 7 Due March 21st

Part 7: Applications of Deductive Logic

Week 26 (Mar. 26, 28)	• Rudolf Carnap, from *Introduction to the Philosophy of Science* • Rudolf Carnap, *The Old and the New Logic*
Week 27 (Apr. 2, 4)	• TBA (Regarding Turing Machines and Computer Programming)
Week 28 (Apr. 9, 11)	• TBA (Continuing Turing Machines and Programming) • Review
	Assignment 8 Due April 11th
	Final Exam scheduled by Registrar's Office