

# PHILOSOPHY 008: INTRODUCTION TO LOGIC<sup>1</sup>

UC Riverside, Summer 2017 (Session B)

## Basic Information:

Instructor: Taylor Cyr

Instructor's Email: tcyr001@ucr.edu

Class Meetings: MTWR 11:10am-12:30pm

Class Meeting Location: HMNSS 1605B

Instructor's Office Hours: Mondays 2pm-3pm,  
Tuesdays 1pm-2pm, and by appointment

Instructor's Office: HMNSS 3307

Teaching Assistant: Marek Twarzynski

TA's Email: [redacted]

Section Meetings: MW 12:40pm-1:30pm

Section Location: HMNSS 1605B

TA's Office Hours: Mondays and  
Wednesdays, 9:30am-10:30am

TA's Office: [redacted]

## Required Text:

- Merrie Bergmann, James Moor, and Jack Nelson. 2014. *The Logic Book* (sixth edition). McGraw-Hill. ISBN 0078038413. [Abbreviated below as "BMN"]

## Course Overview

### Description:

This course provides a basic introduction to sentential (i.e., propositional) logic. We begin with the basic notions of argument, validity, and inference. We then learn how to symbolize arguments in natural languages like English by translating them into a formal language, the language of sentential logic. Sentential logic is the logic of truth functions, which serves as the basis of other logics. (Truth functions are also crucial to a number of other fields, especially computer science, linguistics, and mathematics.) The core of the course is learning sentential logic. The system comes in two parts. The first part is truth tables, which give the meanings of the truth functional connectives and can be used to establish a number of logical properties that sentences and sets of sentences have. The second part is the proof theory of sentential logic, where we learn to construct derivations that prove the validity of certain inferences.

Logic is a field of study on its own and the logic of sentential logic is the entry ticket into that field. Moreover, in addition to its centrality to the disciplines already mentioned, the material covered in this course has broader application, as it is key to problem solving in general and being a good critical reasoner. One place where this application is most apparent is with the logical reasoning and logic game questions on the LSAT exam required for entry into most law schools. We will end the course with a discussion of these problems, practicing applying some of the more abstract and formal techniques learned earlier in the course to these problems, and with a discussion of the limits of sentential logic.

## Course Requirements (% of Final Grade)

- Homework Sets (20%)
- Section Grade (10%)
- Midterm Exam (30%)
- Final Exam (40%)

---

<sup>1</sup> This syllabus is subject to change (at the instructor's discretion) with advanced notice.

**Homework Sets:**

- The material takes time to digest, assimilate, and, above all, practice, so you cannot wait until right before the exams to try to cram; instead, stay on top of the material as it is being assigned and presented.
- For this reason, there are four homework sets, each worth 5% of your total grade. These are due at the beginning of class on the days indicated on the schedule below.

**Section Grade:**

- Attendance and participation in discussion section are mandatory, and your section grade will be determined in part by your attendance and participation. The remainder of your section grade will be at the TA's discretion.

**Midterm Exam:**

- The midterm exam will be composed of questions similar to those seen on the two preceding homework sets, but you will not be allowed to use the textbook, notes, or any other resources while taking the exam.

**Final Exam:**

- The final exam will be similar to the midterm exam but will cover the material of the entire course. As with the midterm, you may not use the textbook, notes, or any other resources when taking the final exam. (You will, however, be provided with a copy of the derivation rules for SD when taking the final exam.)

**Course Policies****Academic Integrity:**

Students are expected to act with academic integrity. For details, visit <http://conduct.ucr.edu/learnPolicies/Pages/AcademicIntegrity.aspx>. Cheating and other forms of academic misconduct will be reported to the Student Conduct and Academic Integrity Programs office and will, at the very least, result in an F on the assignment.

**Respect:**

Students are expected to treat each other and the instructor with respect. This includes, among other things, paying attention to what a person is saying, being charitable to others' points of views, and criticizing ideas rather than persons.

**Email:**

Course announcements will be delivered via email, so students are expected to check their email at least once per day on weekdays. The instructor will respond to emails within 24 hours (and often much more quickly than that).

**Disabilities:**

Students with disabilities requiring accommodation should inform the instructor within the first week of class and follow the guidelines outlined by Student Special Services office. For details, visit <http://specialservices.ucr.edu/disabilities/index.html>.

## Course Schedule and Readings<sup>2</sup>

- Week 1
  - Monday (July 31) — Introduction to the Course
    - No assigned reading
  - Tuesday (Aug 1) — Introduction to Deductive Logic
    - BMN 1-14
  - Wednesday (Aug 2) — Syntax and Simple Symbolization
    - BMN 15-37
  - Thursday (Aug 3) — Complex Symbolization
    - BMN 37-68
- Week 2
  - Monday (Aug 7) — Semantics: Introduction to Truth Tables
    - BMN 69-76
    - Homework Set 1 due at the beginning of class
  - Tuesday (Aug 8) — Semantics: Logical Status
    - BMN 77-87
  - Wednesday (Aug 9) — Semantics: Equivalence and Consistency
    - BMN 87-95
  - Thursday (Aug 10) — Semantics: Entailment and Validity
    - BMN 95-105
    - Homework Set 2 due at the beginning of class
- Week 3
  - Monday (Aug 14) — Semantics: Review
    - No assigned reading
  - Tuesday (Aug 15)
    - Midterm
  - Wednesday (Aug 16) — Derivations: Introduction to the Derivation System
    - BMN 146-149
  - Thursday (Aug 17) — Derivations: The Non-Subderivation Rules
    - BMN 149-155
- Week 4
  - Monday (Aug 21) — Derivations: Conditional and Biconditional Proofs
    - BMN 155-159
  - Tuesday (Aug 22) — Derivations: Reductio Ad Absurdum
    - BMN 159-166
    - Homework Set 3 due at the beginning of class
  - Wednesday (Aug 23) — Derivations: Disjunction Elimination
    - BMN 166-174
  - Thursday (Aug 24) — Derivations: Strategy
    - BMN 175-194
- Week 5
  - Monday (Aug 28) — Derivations: Complicated Derivations
    - BMN 194-214
  - Tuesday (Aug 29) — Application of Sentential Logic: LSAT Logic Games
    - No assigned reading

---

<sup>2</sup> All readings are found in the sixth edition of The Logic Book (the assigned textbook), which is abbreviated as “BMN”.

- Homework Set 4 due at the beginning of class
- Wednesday (Aug 30) — The Limits of Sentential Logic
  - BMN 262-267
- Thursday (Aug 31) — Course Summary and Review
  - No assigned reading
- Final Exam: Friday (Sep 1), 1pm-3pm