

Introduction to Symbolic Logic

PHIL 201, Fall 2016

01 730 201 04 – 18196

Course Information

Instructor: Zee R Perry (temporary contact email: zee.perry@nyu.edu)

Course Date & Time: Monday/Thursday from 11:30am–12:50pm (Period 3)

Classroom: Frelinghuysen A4, College Avenue Campus

Office: TBD (will be announced on first day of class)

Office Hours: TBD (will be announced on first day of class)

Course Description

Logic is the study of arguments and inferences, with a goal of understanding how they work, what it takes for them to succeed, and why they fail when they don't. Symbolic, or formal, logic is the sub-field of logic concerned with understanding how the features of a good argument can be generalized into reliable rules of inference. In this class, we will discuss deductive arguments informally at first and, then, as we encounter problems of ambiguity and confusing phrasings, we'll introduce symbols to assist in the formalization and generalization of these rules of reasoning.

We will use formal languages, in particular truth-functional sentential logic and quantitative predicate logic, to model patterns of inference. By the end of the course, the student is expected to understand the purpose of these systems, and how they achieve that purpose. The student is also expected to be able to translate English sentences into these formal languages, to use these languages to accurately model informal English arguments, to evaluate arguments formulated in these languages, and to use these systems to derive conclusions from a given set of premises.

Required Texts

The course requires a version of Gary Hardegree's *Symbolic Logic: A First Course*. There is a version available through the bookstore:

Hardegree, Gary M. *Symbolic Logic: A First Course*. Primis Custom Publishing, 4th Edition. ISBN: 0-07-803981-9

This book is listed as "optional". An earlier edition of the Hardegree book can be found, **for free**, online at: <http://courses.umass.edu/phil1110-gmh/MAIN/IHome-5.htm>. At least one version of the Hardegree book will be necessary.

For most classes, additional readings will be assigned and distributed in .PDF form. These readings will be sent out usually one or two weeks before the relevant class period, and are also available on the course website: zrperry.com/teaching/logic201-fall2016 (password will be distributed in class)

Coursework

Homeworks (25%): Homework will be assigned weekly. Your work will be prepared for anonymous review (with students pre-assigned random numbers/code-names), homeworks will be exchanged with other students and then graded/marked in class.

Three In-Class Exams (40%): There are six in-class exams, three of which (Exams 2, 4, and 6) are make-up exams that cover similar material and contain similar questions to a previous exam. Besides serving as make-up exams, these additional exams can be used to improve your grade. That is, you are free to take the make-up exams even if you didn't miss the original. If you take both an exam and its make-up, only the higher of the two scores will count towards your final grade (A missed exam counts as a zero).

Final Exam (25%): The final exam for the course will be cumulative, but with a focus on more recent material (specifically derivations in predicate logic).

Participation and Quizzes (10%): Participation is calculated as a combination of attendance (which is mandatory and will be counted), asking and answering questions in class (either in class, during office-hours, or via email), and on a few small, unannounced, in-class quizzes.

Regular class attendance, and completing the regular homeworks, are both essential to doing well in this course. Students are expected to attend all classes; if you anticipate missing a class, please use the university's absence reporting website <https://sims.rutgers.edu/ssra/> to report the date and reason for your absence. An email is automatically sent to me.

Core Curriculum Learning Goal:

This course meets learning goal 'QR': "Apply effective and efficient mathematical or other formal processes to reason and to solve problems." Assessment will be by an SAS generic rubric embedded in the evaluation criteria laid out in this syllabus.

Schedule of Classes

(note: Chapter listings are approximate, due to differences between the Hardegree editions. Specific reading assignments will be distributed at least two weeks before the relevant class period.)

Week 1 (Sept 8)	What is Logic? Understanding Arguments
Week 2 (Sept 12–15) Hardegree Chapter 1, 2.1, 2.2	Syllogisms, Substitutions, and Connectives
Week 3 (Sept 19–22) Hardegree Chapter 4	Removing Ambiguity: the road to Sentential Logic
Week 4 (Sept 26–29) Hardegree Chapter 4	Introducing Sentential Logic and its Rules.

Week 5 (Oct 3–6) EXAM 1 Hardegree Chapter 3	Semantics: Understanding Models and Truth-tables
Week 6 (Oct 10–13) EXAM 2 (EXAM 1 make-up) Hardegree Chapters 2.3–2.10 and 3	Constructing and Evaluating Arguments in Sentential Logic
Week 7 (Oct 17–20) Hardegree Chapter 5, extra readings	Proofs & Proof Strategies
Week 8 (Oct 24–27) EXAM 3 Hardegree Chapter 5	More Proofs and Derivations in Sentential Logic
Week 9 (Oct 31–Nov 3) EXAM 4 (EXAM 3 make-up) Hardegree Chapter 6.1–6.7	Getting Fine-Grained: The Road to Predicate Logic
Week 10 (Nov 7–10) Hardegree Chapter 6, 7.1–4	Introduction to Quantifiers
Week 11 (Nov 14–17) EXAM 5 Hardegree Chapter 7	Understanding Predicate Logic
Week 12 (Nov 21) EXAM 6 (EXAM 5 make up)	Sentential Operators: Modes and Modal Logics
Week 13 (Nov 28–Dec 1) Hardegree Chapter 8	Derivations in Predicate Logic
Week 14 (Dec 5–8) Hardegree Chapter 8	More Practice with Proofs & Make-up day
Week 15 (Dec 12)	Class Review.

FINAL EXAM: Thursday, December 22nd. 12:00pm–3:00pm, as per university schedule.