

Formal Reasoning

PHL 330

Fall 2018

MWF 11:00am-12:10, A332 Wells Hall

Ted Richards, PhD

Office: 519 South Kedzie Hall

Office Hours: TBA and by appointment

Catalog Description

Formal methods in deductive reasoning. Logic of connectives and quantifiers including identity, functions, and descriptions.

Overview

This course is an introduction to formal symbolic logic. We will treat symbolic logic as a language like any other, complete with its own vocabulary, syntax, and grammar. To become proficient in this new language, we will focus on the rules and techniques for translating English into both sentential and first-order predicate logic. We will also explore the methods and strategies for determining the logical status for any argument which can be expressed in formal logic. In the process, we will develop and strengthen language and problem-solving skills, particularly those skills associated with the close reading of texts for both meaning and analysis. In addition, those students who successfully complete this course will be prepared for more advanced logic courses.

Text

R. L. Simpson (1999) *Essentials of Symbolic Logic*. 3ed. ISBN: 1551118939

How the Class Will Run

An introductory course in formal logic is essentially a skills course. You will be introduced to, and develop new skills common to all languages. New material will be introduced in class meetings and will be reinforced by the readings. Just like all other skills, however, mastery of formal logic requires more than just following along in class or readings—true mastery requires practice, practice, and more practice. Thus, there will be homework assignments almost every day. These will be given at the end of each class meeting. Students are strongly encouraged to do the reading and homework before the next class meeting. While the assignments will not be collected, the beginning of each class meeting will be devoted to questions from the previously assigned homework. The goal is mastery of these skills before the end of the course, so while there will be three exams and a final exam, a strong final exam will correlate with a good final course grade (see explanation in Course Evaluation).

Evaluation

There will be three chapter exams and a final comprehensive exam. Your final grade will be calculated by one of the following methods:

Method 1: Exams 1, 2, and 3 20% each; Final Exam 40%

Method 2: Final Exam 100%

The highest grade produced by these two methods will be the grade reported to MSU.

All grades are calculated on a 100 point scale. At the end of the term, your final grade will be reported to MSU according to the following scale:

4.0	90% and above
3.5	85–89%
3.0	80–84%
2.5	75–79%
2.0	70–74%
1.5	65–69%
1.0	60–64%

Final grades will be rounded to the nearest ones digit in the standard way, e.g., 59.50 is rounded to a 60 while 59.49 is rounded to a 59.

Other Stuff

- Don't Fall Behind! If you don't understand something don't let it slide. There is a lot of material to be covered and the skills build on one another, so if you don't grasp something early you'll find yourself in an inescapable hole. Ask questions. Do all the reading. Ask questions. Do all the homework (there is no other way to be sure that you really grasp the skill). Ask questions. Attend all the classes. Ask questions. To do anything else is certain death (not literally, but GPA wise, trust me I'm a professional).
- Periodically, class announcements will be made through D2L. Please make sure that you check either the web site associated with the class or your MSU e-mail regularly.
- If you know you can't make a scheduled examination, make arrangements with me at least one week before the exam, two weeks before the final exam.
- Grades are non-negotiable. If I have made an arithmetic error, please let me know and I will correct it. If you are dissatisfied with your grade, please make an appointment with me so we can improve your future work.
- Use of electronic devices in lectures is discouraged, but will be allow so long as they are not disruptive to other members of the class. This means, at a minimum, cell phones must be made silent during lecture time. The instructor reserves the right to ban and/or confiscate electronic devices if they become disruptive.

• **Academic Honesty:** Article 2.3.3 of the [Academic Freedom Report](#) states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." In addition, the Philosophy Department adheres to the policies on academic honesty as specified in General Student Regulations 1.0, *Protection of Scholarship and Grades*; the all-University Policy on *Integrity of Scholarship and Grades*; and Ordinance 17.00, Examinations. (See [Spartan Life: Student Handbook and Resource Guide](#) and/or the MSU Web site: www.msu.edu.) Therefore, unless authorized by me, you are expected to complete all course assignments, including homework and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Also, you are not authorized to use the www.allmsu.com Web site to complete any course work in PHL 330. Students who violate MSU academic integrity rules may receive a penalty grade, including a failing grade on the assignment or in the course. Contact me if you are unsure about the appropriateness of your course work. (See also <http://www.msu.edu/unit/ombud/dishonestyFAQ.html>)

• **Accommodations for Students with Disabilities** (from the Resource Center for Persons with Disabilities (RCPD): Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation ("VISA") form. Please present this form to me at the start of the term and/or two weeks prior to the accommodation date (test, project, etc.). Requests received after this date will be honored whenever possible.

Tentative Schedule

			<u>Readings</u>	<u>Problems</u>
Aug	29	Class introduction		
	31	Introduction	Ch1, 2.1-.5	all 2.6
Sept	3	No Class		
	5	Translation	2.7-.12	odd 2.13
	7	<i>Practice</i>		
	10	Truth Tables	2.14-.15	all 2.16
	12	TF: true, false, equiv	2.17-.19	odd 2.18-.20
	14	<i>Practice</i>		
	17	Arguments	2.21	all 2.22
	19	Translation	2.23	odd 2.24
	21	<i>Practice</i>		

	24	Exam 1		
	26	Derivation Intro	3.1-.7	all 3.8
	28	Constructing Derivations	3.9	all 3.10
Oct	1	<i>Practice</i>		
	3	More inference rules	3.11-.16	all 3.17
	5	<i>Practice</i>		
	8	More Construction	3.18	odd 3.19
	10	<i>Practice</i>		
	12	Indirect Proofs	3.20	odd 3.21
	15	<i>Practice</i>		
	17	Categorical Derivations	3.22	odd 3.23
	19	<i>Practice</i>		
	22	Exam 2		
	24	Predicate Logic Intro	4.1-.3	all 4.4
	26	Quantifiers	4.5-8	all 4.9
	29	<i>Practice</i>		
	31	People and Things	4.10	all 4.11
Nov	2	Identity	4.12	all 4.13
	5	<i>Practice</i>		
	7	Domians	4.14	odds 4.15
	9	<i>Practice</i>		
	12	Arguments	4.16	all 4.17
	14	<i>Practice</i>		
	16	Exam 3		
	19	PL Derivation Rules	5.1-.7	all 5.8
	21	Derivation strategies	5.9	odd 5.10
	23	No Class		
	26	<i>Practice</i>		
	28	More stratiges	5.11	odd 5.12
	30	<i>Practice</i>		
Dec	3	Catagorical Derivations	5.13	all 5.14
	5	<i>Practice</i>		
	7	<i>Practice</i>		

Final Exam: Wednesday, Dec 12, 7:45-9:45am in A332 Wells Hall