COURSE — Symbolic Logic (phil 1500)

INSTRUCTOR — J. Dmitri Gallow
✉: jdmitrigallow@pitt.edu

MEETING TIMES — Mondays and Wednesdays, 15:00–16:15
Room 149 (the French Room), Cathedral of Learning

OFFICE HOURS — Mondays and Wednesdays, 16:15–17:15
1009-H, Cathedral of Learning

COURSE GOALS — This course is intended as a second course in logic for students who have already completed Phil. 0500. However, it will not presuppose any knowledge of formal logic; for this reason, students with strong analytical skills should feel free to take the course without completing the pre-requisite. We will begin with a brief review of propositional logic (covered in Phil 0500), and progress quickly into predicate logic with quantifiers, identity, and functions. This theory will allow us to think about the logic of quantified claims like "All humans are mortal" (does this entail that some humans are mortal?) and "Some dogs are lazy" (does this entail that some dogs are not lazy?), as well as more complicated claims like "Everybody loves a lover and somebody loves themselves" (does this entail that everybody loves everybody?), "There is a barber who shaves all and only those who don't shave themselves" (is this possible?), and definite descriptions like "The King of France is bald". Towards the end of the course, we will foray into metalogic and learn to think rigorously about the logical systems we learned about in the first part of the course. We will learn the technique of mathematical induction, and we will use it to prove that the methods we learned about in the first part of the course are weak enough that they won't tell us that an invalid argument is valid (they are "correct"), and that they are strong enough that, for every valid argument, they will tell us that it is valid (they are "complete"). Time permitting, we may also discover that, if a conclusion follows from an infinite set of premises, then it also follows from a finite set of premises.

COURSE TEXT — The textbook for the course will be Paul Teller's "A Modern Formal Logic Primer", available for free online at http://tellerprimer.ucdavis.edu/

EVAULATION — Your final grade in this course will be determined by 5 components:

Problem Sets	20%
In-class Exercises	10%
Test 1	20%
Test 2	25%
Final	25%

At eleven points throughout the course, you will be asked to complete a problem set on the recently covered material. You are allowed, and even encouraged, to work through these problems with other students in the course. However, be sure to not fall into the trap of simply copying the answers of your fellow students. The problems sets are *for your benefit*, to help you learn the material. If you simply copy the work of your fellow students, you'll be in

a bad position for the tests, which make up a larger percentage of your final grade.

Frequently, you will be given exercises to complete in class on the material we are covering. If you don't attend, of course, you will not be able to complete these assignments. **If you miss class without a legitimate excuse, you will not be allowed to make up in class assignments**.

There will be in-class tests on 10/5 and 11/11. For each of these, I will provide practice tests at least a week ahead of time. There will be a final on 12/19, from 8:00–9:50. The final will be cumulative, covering everything in the course. I will provide a practice final at least a week ahead of time.

SCHEDULE

8/31: Course Intro and Basic Concepts of Logic

Teller, Vol. I, Ch. 1, §1-1

9/2–9/9: Sentence Logic, Syntax and Semantics (2 classes)

Teller, Vol. I, Ch. 1, §1-2–§1–6
Teller, Vol. I, Ch. 2

9/14: *SL* Tautologies, *SL* Equivalence, and Expressive Completeness

Teller, Vol. I, Ch. 3
problem set 1 due

9/16: Validity in *SL*

Teller Vol. I, Ch. 4

9/21–9/28: Truth Trees in *SL* (3 classes)

Teller, Vol. I, Ch. 8 (9/23) and Ch. 9 (9/28)
problem set 2 due (9/23)

9/30: Predicate Logic: Syntax

Teller, Vol. II, Ch. 1
problem set 3 due

10/5: **First Test**

10/7–10/13: Predicate Logic: Semantics & Validity (2 classes)

Teller, Vol. II, Ch. 2

10/14: Predicate Logic: Quantifiers

Teller, Vol. II, Ch. 3
problem set 4 due

10/19: Predicate Logic: Translation

Teller, Vol. II, Ch. 4

SCHEDULE (CON'T)

10/21–10/26: Predicate Logic: Truth Trees (2 classes)

TELLER, Vol. II, Ch. 7 (10/21) and Ch. 8 (10/26)
problem set 5 due (10/26)

10/28–11/4: Predicate Logic: Identity, Functions, and Definite Descriptions (3 classes)

TELLER, Vol. II, Ch. 9
problem set 6 due (10/28)

11/9: Metatheory: Basic Concepts

TELLER, Vol. II, Ch. 10
problem set 7 due

11/11: **Second Test**

11/16–11/18: Metatheory: Mathematical Induction (2 classes)

TELLER, Vol. II, Ch. 11

11/23–12/9: Metatheory: Soundness and Completeness for Sentence Logic Trees (5 classes)

TELLER, Vol. II, Ch. 12
problem set 8 due (11/23)
problem set 9 due (12/9)

12/19: Final

8:00–9:50, Room 149 (the French Room), Cathedral of Learning

ACADEMIC INTEGRITY

Cheating will not be tolerated. If you are found cheating on any assignment, you will automatically receive a failing grade for the course. Please familiarize yourself with the University's policies on academic integrity at www.cfo.pitt.edu/policies/policy/02/02-03-02.html.

LAPTOP POLICY

As a general rule, you may not use laptops or smartphones during class time. If you have some special reason to require the use of a laptop during class, come speak to me about it.

SPECIAL ACCOMODATION

If you require special testing accommodations or other classroom modifications, you need to notify both me and the Disability Resources and Services (http://www.studentaffairs.pitt.edu/drswelcome) no later than the 2nd week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call 648-7890 (Voice or TTD) to schedule an appointment. The Office is located in 140 William Pitt Union.

REVISION POLICY

This syllabus is subject to revision at the instructor's discretion.

REFERENCES

TELLER, PAUL. 1989. *A Modern Formal Logic Primer*. Prentice Hall, available at http://tellerprimer.ucdavis.edu/pdf/. [2], [3]