MATH 141B: MATHEMATICAL LOGIC II

Instructor: Will Boney
Class Location: SC 310
Class Time: TR 9:00-10:15am
Textbook: Lindström, **Aspects of Incompleteness** (free online)
Instructor's Office: Science Center 238
Course Website: `http://www.math.harvard.edu/~wboney/spring19/`

Tuesday	1:00-2:00pm
Thursday	2:00-3:00pm

1. Course Description

The goal of this course is to prove Gödel's Incompleteness Theorems and related topics. Depending on pace and interest, we will cover:

- Gödel's First and Second Incompleteness Theorems
- particular statements of incompleteness, such as the Paris-Kunen Theorem
- Tarski's undefinability of proof and the halting problem
- recursion and computability theory

1.1. **Prerequisites:** Familiarity with mathematical proofs (Math 101, 112, or something similar). This is required both because a) you will be doing proofs in your homework and b) because this is a course about proofs.

Note that Math 141a is **not** a prerequisite. However, we will sometimes make reference to this material without proof.

1.2. **References:** The textbook is Per Lindström, **Aspects of Incompleteness**. This is available for free on Springer's website (see the link on the course webpage). Additional (and free!) resources are listed on the website.

2. Policies

2.1. **Problem Sets.** Every week, we will have homework due on Tuesday in class. Homework will be assigned in class and posted to the course website. At the latest, the assignments will be posted when you turn in the previous ones. Late homework will not be accepted. However, you are given two 'grace' assignments that can be turned in up to one week late.

I encourage you to collaborate with classmates. We will be covering some hard material, and often quickly. Discussing these concepts with other students is one of the best ways to get to the heart of the matter. Math Night is an excellent venue

for this. Additionally, I will be putting you into small groups for the first three assignments. It is not required that you do anything with these groups, but I will give you extra credit on these assignments if you spend at least 1 hour working together.

In order to encourage you to learn from your mistakes (one of the most important skills), you are able to resubmit assignments for up to half of the points back. These resubmissions should be clean rewrites (rather than marking up the initially submitted work) and are due a week after you get the graded assignment back. Be sure to submit your original assignment with the rewrite.

As for doing the homework, the work that goes into the answer, rather than just the answer, is the most important part. Thus, all problems require justification. Failure to give justification will result in no credit for the problem. Not providing enough justification will also result in lost points.

2.2. **Exams.** There will be a final exam. It will either be a take-home exam or in-class (to be determined). If in-class, the registrar has scheduled the exam for May 15, 2:00pm.

2.3. **Percentage Breakdown.**

Problem Sets	70%
Final	30%

2.4. **Accessibility.** I'm happy to accommodate any modifications suggested by the Accessible Education Office (AEO). Please be sure to provide me with the introductory letter as soon as possible.

2.5. **Academic Integrity.** I expect students at all time to follow Harvard's Honor Code and practice academic integrity. I understand that the line between collaboration and plagiarism can be murky on problem sets, but the following is a good (and oft quoted) rule of thumb: working together is fantastic, but you should always be able to separate and right up your solutions individually. If you have any questions, please don't hesitate to ask.