Course assistant:

Ava Zinman

Preston Bushnell

Office Hours:

You are encouraged, and always welcome, to come to office hours. If you are interested in coming, you can find me at my CMSA office (**20 Garden Street**) on **Tuesday (5:30PM-6:30PM)** and **Thursday (5:30PM-6:30PM)** after class.

Also feel free to contact me by email at **alejandropovedaruzafa@fas.harvard.edu**.

Course goals:

This course covers basic mathematical logic beginning with the propositional calculus where the basic notions of truth and proof are first introduced. The course continues with the first order predicate calculus, which is the formal logical language for all of mathematics. This will be done in the context of examples drawn from the basic mathematical structures underlying modern mathematics, such as that of the real numbers. The main goal of the course is the GÃ¶del Completeness Theorem and some applications of its key consequence, the Compactness Theorem.

The course will mostly follow Slaman-Woodin's text on Mathematical Logic which is uploaded to this Canvas page. The course text as well as other material provided (such at Psets and solutions) are for your own use only. This material is not to be made available to anyone outside the class

Typical enrollees:

It is required to have taken a rigorous proof-based class in pure mathematics, and be familiar with formal proofs. Specifically, a course at the level of 25ab, 55ab, 101, or 112.

Seeking help:

Feel free to come to office hours, or contact me by email, regarding anything you would like to discuss. I am here to help! For example, if you have general questions about the class, questions about your standing in the class; questions regarding the material; questions about the assignments.

In this class we will cover several topics, which take time to process and fully understand. Asking questions, getting help, and discussing the material with others, are important parts of the process. It is best to seek help early, and not let things pile up. You are expected to invest a significant amount of time and energy to study the topics of this course, and I am here to help you learn.

Also, please feel free to communicate with me any non-academic issues that may interfere with your ability to fulfil the course work or succeed in the class.

Assignments and grading:

The grade will be based on the Psets. Possibly with a longer one at the end.

Psets:

- The Psets are a crucial part of the course, and may include important results and definitions.
- Resubmission: You may resubmit each Pset once, if necessary, to improve your score. See rules for resubmission below.
- The Psets will be graded strictly. To get credit, your solutions need to show that you understand the material. (This goes hand in hand with the resubmission policy.)
- Late submission will not be accepted.
- It is encouraged to discuss the course material, in particular homework problems, with your classmates.

However, your final submitted work must be your own writing in your own words and must not be copied from any source, written or verbal. List your collaborators on each assignment (if any).

- Please make sure your homework submission is legible, clear, and well organized.
  If possible it is recommended to type the assignment (or parts of it) in Latex or a similar program. This is not mandatory, but experience in Latex will also be useful to you later on in your academic studies.

- Solutions to the homeworks will not be published.
  It is your responsibility to make sure you understand the material and the Psets. Feel free to ask any questions or seek help at any time.

Resubmission policy:

â€¢ You may only resubmit a Pset if a true and honest attempt was made to begin with. This will be judged by the grader of the Pset. For example, you may not simply not submit the Pset, and then â€œresubmitâ€ it late.

This is the case for each individual question. So if you submitted only some questions of a Pset, you may only resubmit those questions (assuming a true attempt was made).

â€¢ Collaboration is not allowed for resubmission. After you get your assignment back, if you plan to resubmit, you may no longer collaborate or use any resource. You may not look at the solutions of a classmate or discuss the problems with a classmate, nor look up solutions online. You are allowed to discuss the Pset with the teaching staff in office hours.

â€¢ Only one resubmission is allowed per Pset. You must resubmit within 2 weeks of receiving the graded Pset.

Grading philosophy:

When grading, I will focus on the key mathematical ideas behind the problem. The best way for you to get the most points is to clearly state what you know and donâ€™t know, your ideas and intentions.

Writing things that are irrelevant, completely incorrect, or show a serious lack of understanding of the material, may result in no credit at all. Completely irrelevant arguments may be deemed as not an honest attempt to solve the problem. Also, writing things that may deserve partial credit, but incorrectly presenting them as a full proof or complete solution, may result in no credit at all.

If you only have a partial solution, or some meaningful things to say about the problem, the best thing to do is to say it as it is, explain what you are proving and what you are not, and if possible explain what is missing.

Finally, your solutions are expected to be clear, well written, and mathematically accurate.

Statement on student wellness:

As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities.

If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, I strongly encourage you to seek support. Counseling and Mental Health Services (CAMHS) is here to help: call 617-495-2042 or visit their website at https:// camhs.huhs.harvard.edu/find- help-now. Consider reaching out to a friend, faculty or family member.