# Mathematics 25a - Fall 2002
# Honors Advanced Calculus and Linear Algebra

**Time and Place:** MWF 9–10, Science Center 507.

**Instructor:** Mihnea Popa.
Office: 521 Science Center.
Phone: 495-4471.
E-mail: mpopa@math.harvard.edu.
Office hours: MW 11–12.

**Textbook:** *Vector Calculus, Linear Algebra, and Differential Forms* by John Hubbard and Barbara Hubbard.

**Course description.** The goal of Math 25a is to give a rigorous treatment of linear algebra and multivariable calculus. The topics covered include vector spaces, metric spaces, metric topology, differentiation and integration.

**Teaching fellow.** Izzet Coskun.
Office: 333b Science Center.
e-mail: coskun@math.harvard.edu.
Office hours: MW 2–3. Recitation: Monday 7–8, Room 507.

**Course assistants.**
Elizabeth Schemm.
e-mail: schemm@fas.harvard.edu.
Office hour: Thurs 7-8pm, Rm 310.
Section: Tues 7-8pm, Rm 507.

Luke Gustafson.
e-mail: gustafs@fas.harvard.edu.
Office hour: Tues 4-5pm, 4th floor lounge.
Section: Thurs 4-5pm, Rm 209.

**Office hours.** For essentially any specific math questions, you should attend the office hours held by the course assistants or the teaching fellow. Each course assistant will hold a weekly office hour. The times for these will be communicated soon. Also, the teaching fellow will hold two office hours every week. My office hours are intended for administrative issues or for directing you towards reading further topics if interested. Please try to observe this gradation.

**Sections.** You should each attend at least one weekly problem session held by the course assistants. The exact time and location of the sessions will be arranged in class. Also, the teaching fellow will hold a weekly recitation session, where he will answer questions and present topics not covered in class.

**Homework.** Weekly homework assignments will be handed out each Friday, and they are due the following Friday. Homeworks may be turned in to the course mailbox outside the math office at 325 Science Center any time before 5 PM on Friday. They will be returned hopefully by the end of the following week. Late homework will be accepted only in exceptional circumstances and with prior approval. The lowest score will be dropped at the end of the semester.

**Exams and Grading.** We will have two midterms, one on October 16 and the other on November 13 (both temporarily subject to change), during regular class hours. The final exam will be held on January 14 (time and place to be announced).

**Final Grade.** Your final grade will be based on your performance on homework (30%), first midterm (15%), second midterm (20%) and final exam (35%). If your final exam score is much higher than the midterms, I may assign more weight to it when determining your grade. However, a good final exam score will not make up for missing homeworks.

**Collaboration.** You are strongly encouraged to discuss homework problems with your fellow students or the course assistants. However, you have to write up your solutions by yourself. Collaborating on exams is not permitted.

**Supplementary books.** Math 25 covers a wide range of topics: linear algebra and multivariable calculus are the main ones, but we also study topological spaces, metric spaces, real analysis and other topics. In case you want to learn more about these subjects than is covered in the textbook, here is a sample of very good books:

Linear algebra: *Linear algebra Done Right* by S. Axler.

Analysis: *Principles of Mathematical analysis* by W. Rudin.

Topology: *Basic Topology* by M. A. Armstrong.