

FUNDAMENTAL CONCEPTS OF ANALYSIS III

- **Instructor:** Boris Solomyak, Padelford C-328, Office Phone 685-1307.
Email: solomyak@math.washington.edu
- **Office Hours:** Tuesdays 11:00-12:00, Thursdays 3:45-4:45, or by appointment.
- **Teaching Assistant:** Peter Couperus, Padelford C-8F (in the “dungeon”)
Email: couperus@math.washington.edu
Office hours: Thursdays 9-11.
- **Class Meetings:** MWF 11:30–12:20, LOW 106
- **Course Web Site:**
<http://www.math.washington.edu/~solomyak/TEACH/426/05/gen.html>
- **Text (required):** *The elements of integration and Lebesgue measure*, Robert G. Bartle, New York, Wiley, 1995.
- **Midterm:** Friday, May 6 (6th week)
- **Take-home test:** given on Friday, May 27 (9th week), due on Friday, June 3 (last day of the quarter).
- **Final exam:** Wednesday, June 8, 2:30-4:20, LOW 106.
- **Prerequisites:** 2.0 or better in Math 425/575 or instructor’s permission.
- **Brief description:** This course continues Math 424/574-425/575 and provides an introduction to measure theory and integration. Tentative plan:
Weeks 1-2: Introduction, Measurable Functions, Measures (Chapters 1-3)
Weeks 3-4: Generation of Measures, Lebesgue Measure (part of Chapters 9, 11-17)
Weeks 5-6: Integral, Integrable Functions (Chapters 4-5)
Weeks 7-8: Lebesgue Spaces L^p , Modes of Convergence, Decomposition of Measures (light coverage, part of Chapters 6-8)
Weeks 9-10: Product Measures (Chapter 10), Review
- **Guidelines**
There will be a homework assignment due every Friday, at the beginning of the class (except the weeks 6 and 10). The first homework is due on April 1 (no joke!). Please STAPLE your homework and clearly mark it with your name. The weekly homework will only be partially graded. NO late homework will be accepted, and this quarter the lowest homework score will NOT be dropped. (In case of illness or family emergency

late homework may be accepted, or the grading scheme may be appropriately modified.) Students may work together on the homework, but they must write it individually. The general rules for academic honesty apply to all written work. Homework will count for 20% of the course grade.

The Midterm will be on Friday, May 6, and it will count for 20% of the course grade. The take-home test will be given on *Friday, May 27*, and due on *Friday, June 3*. **Unlike the homework, you are not supposed to discuss the take-home test with anybody!** You can use your notes and the Text on the take-home test. The take-home test will also count 20% of the course grade. There will be a comprehensive final exam on *Wednesday, June 8, 2:30–4:20*, which will count 40% of the course grade. The in-class Midterm and the final exam will be closed book, but you will be allowed to bring notes (handwritten, 1 two-sided page on the midterm, 2 two-sided pages on the final) on a notebook size sheet of paper. No calculators or other devices will be allowed on tests.

- **GRADES.**

Your grade will be based on a weighted average of the following scores:

20% Homework, 20% Midterm, 20% Take-home test, 40% Final exam

- **HOME ASSIGNMENT 1 (due on Friday, April 1).**

2A, 2B, 2D-2H (turn in all seven problems)

OTHER RECOMMENDED BOOKS. The following books are on reserve:

1. Billingsley, Patrick, *Probability and measure*, New York, J. Wiley, 1995.
2. Pollard, David, *A user's guide to measure theoretic probability*, Cambridge, Cambridge University Press, 2002.
3. Royden, H. L, *Real Analysis*, New York, Macmillan, 1988.

DISCLAIMER: The syllabus is intended to provide an overview of the class. You cannot claim any rights from it. In particular, due dates, exam dates, and grading schemes may change. Official announcements are always those made in class.

- **CLASS MAILING LIST.**

The mailing list has been created for these classes:

`math426a_sp05@u.washington.edu`

`math576a_sp05@u.washington.edu`

It can be used to distribute e-mail to everyone in the class.