

Math 205B – Real Analysis

András Vasy, Winter 2020-2021: PRELIMINARY SYLLABUS, AS OF
NOVEMBER 8, 2020

- January 11. Introduction and review (Ch. I)
- January 13. Ascoli's theorem (Ch. I)
- January 15. Hilbert spaces (Sec. II.1)
- January 20. Riesz lemma (Sec. II.2)
- January 22. Orthonormal bases (Sec. II.3)
- January 25. Orthonormal bases, continued (Sec. II.3)
- January 27. Banach spaces and duals (Sec. III.1-III.2)
- January 29. Hahn-Banach theorem (Sec. III.3)
- February 1. Hahn-Banach theorem, continued, operations on Banach spaces (Sec. III.3-III.4)
- February 3. Baire category theorem and consequences
- February 5. Baire category theorem and consequences, continued (Sec. III.5),
Topological spaces (Sec. IV.1)
- February 8. Weak topologies on Banach spaces (Sec. IV.5)
- February 10. Compactness (Sec. IV.3)
- February 12. Stone-Weierstrass theorem (Sec. IV.3)
- February 17. Banach-Alaoglu theorem (Sec. IV.5)
- February 19. Midterm
- February 22. Riesz-Markov theorem (Sec. IV.4)
- February 24. Locally convex spaces (Sec. V.1)
- February 26. Locally convex spaces (cont'd), Fréchet spaces (Sec. V.1-2)
- March 1. Schwartz functions and tempered distributions (Sec. V.3)
- March 3. Schwartz functions and tempered distributions, continued (Sec. V.3)
- March 5. Bounded operators, adjoints (Sec. VI.1-2)
- March 8. The spectrum (Sec. VI.3)
- March 10. The spectrum, continued (Sec. VI.3)
- March 12. Compact operators (Sec. VI. 5)
- March 15. Compact operators, continued (Sec. VI. 5)
- March 17. Compact operators, continued (Sec. VI. 5)
- March 19. The continuous functional calculus (Sec. VII.1-2)

Note: The schedule is still subject to change.