

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.