Topics for Qualifying Exam in Analysis
MAT 701

1. σ-algebras
2. Measures, outer measures, Borel measures
3. Measurable functions
4. Lebesgue integration in abstract measure spaces and in **R**, Lebesgue measure
5. L^p spaces, Holder's and Minkowski's inequalities, approximation by continuous functions, duality of L^p and L^q.
6. Radon-Nikodym theorem, Lebesgue points, absolutely continuous functions, functions of bounded variation, fundamental theorem of calculus
7. Product measures, Fubini's theorem

References:

- Real Analysis, 2nd ed., Gerald Folland
- Real and Complex Analysis, 3rd ed., Walter Rudin
- Measure and Integral, Richard Wheeden and Antoni Zygmund
- Real Analysis, 3rd ed., H.L. Royden