1 Reviews of measure theory: Stein's book Chap 1, 2, 3

2 absolute continuity and mutually singular of measures, Lebeqgue-Rodon-Nikodym differentiation theorems. Stein Chap 6, section 4.

3 L_p spaces. Lieb Chap 2.

4 Integral inequalities: Young inequality, Hardy-Littlewood inequality, Hausdorff-Young inequality. Lieb Chap 4.

5 Fourier transforms, heat equation. Lieb Chap 5.

6 logarithmic Sobolev inequality and heat kernel estimate.

7 Distribution and Sobolev spaces. Evans, Chap 5

8 Introduction to partial differential equations.

9 Convexity inequalities, special topics.