Isoperimetric Inequalities for Eigenvalues of The Laplacian

This is the possible list of topics that I could cover in, say, three or four lectures on the subject.

1. An overview of Mark Kac's problem, *Can you hear the shape of a drum?*, at an introductory level.

2. Introduction to Rearrangements and Rearrangements Inequalities. The derivation of the Rayleigh–Faber–Krahn Inequality.

3. The Payne–Pólya–Weinberger Conjecture and its proof. (This is an isoperimetric inequality concerning the quotient of the first two eigenvalues of the Dirichlet Laplacian).

4. Lord Rayleigh's conjecture for the clamped plate.

Rafael D. Benguria