Rigidity in holomorphic one-dimensional dynamics:

Lecture One.
(1) Combinatorial rigidity; quasi-conformal rigidity
(2) Quasiconformal mappings: definition, Heinonen-Koskela's theorem and variations
(3) Pull back argument

Lecture Two. Dynamics of polynomials
(1) Green's function, external rays, Branner-Hubbard-Yoccoz puzzle
(2) Standard marking between corresponding puzzle pieces

Lecture Three. Spreading principle and reluctant recurrence
(1) Spreading principle
(2) Rigidity in the reluctantly recurrent case

Lecture Four. Persistent recurrence
(1) Enhanced nest
(2) Kahn-Lyubich's Covering Lemma: proof in the real case
(3) Complex bounds, puzzle shape

Lecture Five. Infinitely renormalizable polynomials
(1) Complex a priori bounds and rigidity for real polynomials
(2) Complex a priori bounds for complex quadratic polynomials: introduction of Kahn, Kahn-Lyubich's results for certain infinitely renormalizable maps

References:
(1) O. Kozlovski, W. Shen, S. van Strien. Rigidity for real polynomials. Ann.Math. 2007, 749-841
(2) A. Avila, J. Kahn, M. Lyubich, W. Shen. Combinatorial rigidity for unicriticalpolynomials. Ann. Math., to appear
(3) O. Kozlovski, S. van Strien. Local connectivity and quasi-conformal rigidity of non-renormalizable polynomials. http://arxiv.org/abs/math/0609710