MATH 70910: Topics in Complexity: Solving Systems of Polynomial Equations
Tues, 2:00pm - 4:00pm, for 5 weeks (beginning April 13th)
Prof. Michael Shub
1 cr.

Can an approximation to a zero of a system of $n$-polynomial equations in $n$-complex variables be found in polynomial cost in the input data? Shub and Smale came close to proving this in the 1990’s in a series of papers on the complexity of Bezout’s theorem. Smale included the problem in his list of problems for the next century (that is our century). Progress has recently been made on this problem in several directions by Beltran-Pardo and Buergisser-Cucker and Beltran-Dedieu-Malajovich-Shub. We will present this recent work as well as the geometric ideas it is based upon.

Chapters 8 through 14 of Complexity and Real Computation by Blum, Cucker, Shub and Smale contains much, but not all, of the material we will be discussing.