Abstract:

At the beginning of the last century S. N. Bernstein gave exact estimates on absolute values of polynomials when they are bounded by a universal constant on a disk or an interval. Later Walsh replaced disks and intervals by non-polar sets and Siciak moved estimates to $C^n$. As it happens any polynomial of several variables admits such estimates provided it is bounded by a universal constant on a non-polar set.

If $f(z)$ is a transcendental function then polynomial $P(z,f(z))$ never vanishes on an open set in the graph of $f$. Thus its coefficients and, consequently, its absolute values admit upper estimates provided that the polynomial is bounded on a piece of the graph. Note that the graph is polar and the transcendence of $f$ is essential.

Now we have a set of questions to answer:

1. What are the estimates and how are they related to the properties of $f$?
2. What are the estimates for the absolute value of $P(z,f(z))$ on the disk of radius $r$?
3. What are the estimates for the number of zeros of $P(z,f(z))$ at the disk of radius $r$?

The talk will not give the answers to all these questions. They still have to be found. The talk will serve as an introduction to this interesting topic that just started to develop.

Friday, April 19, 2002
3:00 PM in 335 Jabara Hall

Please come join us for refreshments before the lecture at 2:30 p.m. in room 353 Jabara Hall.