

THE DEPARTMENT OF MATHEMATICAL SCIENCES

Indiana University - Purdue University Fort Wayne

is pleased to present

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Western Kentucky University — and IPFW Emeritus

An Alternative Proof of Bézout's Theorem

Abstract

In this talk an alternative proof of Bézout's Theorem will be given. Bézout's Theorem states that if $\gcd(a, b) = d$ is the greatest common divisor of two integers a and b , then there are integers s and t such that $sa + tb = d$. The integers s and t are called Bézout's coefficients. This proof does not use the Euclidean Algorithm, or more precisely it does not use the Extended Euclidean Algorithm. The algorithm which is used in the proof gives both the greatest common divisor of two integers a and b and the Bézout's coefficients simultaneously. Then we modify the algorithm to simplify it. The modified algorithm contains one Division Algorithm, (the same as the first step of the Euclidean Algorithm), then defines an arithmetic progression that leads to the greatest common divisor and the first Bézout's coefficient at the same time; to find the second Bézout's coefficient an additional division is needed. Joint work with: G. Petruska, IPFW.

This talk is suitable for students of MA 175/275: Discrete Mathematics.

Noon, Tuesday, Nov. 20, 2012.

Location: LA 232 (Liberal Arts Building)

<http://ipfw.edu/departments/coas/depts/math/news/seminars.html>