

**APPLIED MATHEMATICS SEMINAR**  
Department of Mathematics  
University of West Georgia  
**4:00 PM, WEDNESDAY, NOVEMBER 12, 2008, BOYD 304**

Speaker: Dr. Nguyen Van Minh, UWG

Title: **Asymptotic Behavior of Individual Orbits of Discrete Systems**

**Abstract**

We consider the asymptotic behavior of bounded solutions of the difference equations of the form  $x(n+1) = Bx(n) + y(n)$  in a Banach space  $X$ , where  $n = 1, 2, \dots$ ,  $B$  is a linear continuous operator in  $X$ , and  $(y(n))$  is a sequence in  $X$  converging to 0 as  $n \rightarrow \infty$ . An obtained result with an elementary proof says that if  $\sigma(B) \cap \{|z| = 1\} \subset \{1\}$ , then every bounded solution  $x(n)$  has the property that  $\lim_{n \rightarrow \infty} (x(n+1) - x(n)) = 0$ . This result extends a theorem due to Katznelson-Tzafriri. Moreover, the techniques of the proof based on Complex Functions are furthered to study the stability of solutions of the discrete system. A discussion on further extensions is also given.

All are welcome.