

1116-VF-2613      **Jozsef Balogh, Theodore Molla\*** (molla@illinois.edu) and **Maryam Sharifzadeh**. *Factors in graphs, weighted graphs and directed graphs.*

A factor is a subgraph that contains all of the vertices of its host graph. For instance, a perfect matching is a factor consisting entirely of disjoint edges and a Hamiltonian cycle is a factor that is a cycle. Many celebrated theorems in graph theory give sufficient conditions for the existence of a specific factor. For example, Dirac's Theorem states that if  $G$  is a graph on  $n$  vertices,  $n \geq 3$  and the minimum degree of  $G$  is at least  $n/2$ , then  $G$  contains a Hamiltonian cycle. In this talk, we will describe several related theorems for graphs, directed graphs and weighted graphs. For example, we will discuss the following recent result: For every  $\varepsilon > 0$  there exists  $\gamma > 0$  such that if  $G$  is a graph on  $n$  vertices, the minimum degree of  $G$  is at least  $(1/2 + \varepsilon)n$  and the independence number of  $G$  is at most  $\gamma n$ , then  $G$  has  $n/3$  vertex disjoint copies of  $K_3$  when  $n$  is sufficiently large and divisible by 3. (Received September 22, 2015)