DEPARTMENT OF MATHEMATICS COLLOQUIUM

University of West Georgia

4:00 PM, MONDAY, APRIL 24, 2006, BOYD 301

Speaker: **Prof. Elizabeth J. Billington**
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Title: **Complete Multipartite Graph Decompositions into Cycles**

Abstract.

A complete multipartite graph has its vertices partitioned into parts (called partite sets); there is an edge between any two vertices in different partite sets, but no edge between any pairs of vertices in the same partite set.

In this talk I shall briefly survey some of the results on edge-decompositions of complete multipartite graphs into cycles. I'll include two new results for complete equipartite graphs (when the partite sets all have the same size). One of these involves cycles of length equal to a product of distinct primes, and the other involves a new constraint on the cycles, that of being *gregarious*. A k-cycle in a decomposition is gregarious if its k vertices lie in k different partite sets. Three-cycle decompositions are necessarily gregarious; earlier work on gregarious cycles has concentrated on 4-cycles. Here I shall discuss recent work on gregarious 6- and 8-cycle decompositions.

All are welcome.