

# OPTIMIZATION SEMINAR

(Mathematics & Computer Science)



Monday - Feb. 6, 2012  
1:00 - 1:50 p.m. in E-575

*Presenter:* Tarikul Sabbir (supervised by Dr. Robert Benkoczi and Dr. Daya Gaur)

*Abstract:* Solving NP-hard facility location problems in wireless network planning is a common scenario.

In our research, we study the Covering problem, a well known facility location problem with applications in wireless network deployment. We focus on networks with a sparse structure. First, we analyzed two heuristics of building Tree Decomposition based on vertex separator and perfect elimination order. We extended the vertex separator heuristic to improve its time performance. Second, we proposed a dynamic programming algorithm based on the Tree Decomposition to solve the Covering problem optimally on the network. We developed several heuristic techniques to speed up the algorithm. Experiment results show that one variant of the dynamic programming algorithm surpasses the performance of the state of the art mathematical optimization commercial software on several occasions.

*Light refreshments will be provided.*