

Department of Mathematical Sciences

Distinguished Lecture

Joseph G. Ecker

Edward P. Hamilton Distinguished Professor
Department of Mathematical Sciences
Department of Decision Sciences & Engineering Systems
Rensselaer Polytechnic Institute

4:00 pm, Monday, March 30, 2009, Martin M-102

REFRESHMENTS 3:30 pm, Martin O-112

*An Algorithm for Solving Bilevel Linear Programs Using Multiple
Objective Linear Programming*

In a bilevel linear program, a linear function involving vector variables x and y is minimized subject to constraints, one of which is that the vector y is a minimizing point for another linear optimization problem. There are many application areas for bilevel problems — including transportation network design, production planning, optimal structural design, optimal pricing for road tolls, decision making in multidivisional organizations, price support levels for bio-fuel crops, and subsidy options for reducing greenhouse gas emissions.

We present an algorithm for solving bilevel linear programs where the computations only involve elementary row operations on various matrices. Some theory is presented that shows how multiple objective and bilevel linear programs are related. We also give computational results comparing our algorithm with a widely used branch-and-bound algorithm for solving bilevel problems.

All are welcome. For further information, contact Margaret Wiecek wmalgor@clemsun.edu
(864) 656-5245.