

Department of Systems Engineering Operations Research  
GEORGE MASON UNIVERSITY  
***OR 782: Advanced Topics in Network Optimization***

Time: Mondays; 7:20-10:00pm. S&T II, Room 128;  
Instructor: Professor Karla L. Hoffman  
Office of Instructor: Nguyen Engineering Building, Room 2207  
Phone of Instructor: (703) 993-1679

**Office hours:** Mondays: 1:00-3:00p.m. and by appointment  
I am usually on Mondays and Thursdays from 9:30 to 6:30. I can also be available before/after class on Monday with prior appointment.

**Text:** *Combinatorial Optimization* by W. J. Cook, W. H. Cunningham, W. R. Pulleyblank, and A. Schrijver, John Wiley & Sons, 1998

**Course Materials:** All course materials will be located at: [mymason.gmu.edu](http://mymason.gmu.edu)  
To access these course materials, you will need to have registered for the course and have an active email account at GMU. You will log onto the blackboard site by using your email address name and password.

A rigorous treatment of classic problems in combinatorial and network optimization focusing on algorithms and associated polyhedral theory. The course will examine both polynomial-time and NP-hard problem types. A study of complexity theory is included.

Prerequisite: OR 643 or SYST 521: Network Flows  
A good understanding of the simplex method is also required.

Proposed Topics:  
Minimum spanning trees  
    Kruskal's algorithm  
    The minimum spanning tree polytope  
Review of shortest paths and maximum flows  
The network simplex method and polynomial network-flow algorithms  
    Primal and dual algorithms  
Matching problems  
    Cardinality matching problems  
    Weighted matching  
    Matching polytope  
The traveling postman problem and traveling salesman problems  
Time-space network problems  
Other topics chosen by class

Grade will be based on:	Homework assignments	25%
	Written paper	25%
	Class presentation	30%
	Participation in class	20%