EL 736 Communications Networks II: Design and Algorithms

Instructor: Yong Liu
Date: Wednesday 3:00-5:40pm, Fall 2007, **Classroom:** JAB 673
Prerequisites: EL536 or equivalent, **Related Courses:** EL623, EL735, CS603, CS604
Course Webpage: *http://eeweb.poly.edu/el736/*

Course Description and Outline:
Network design consists of topology design and traffic routing taking into account dynamics in network states, such as link/node failures and traffic demand variations. Efficient design models and optimization methods are crucial to simultaneously achieve good network user performance and high savings in network deployment and maintenance. This course introduces mathematical models, design problems and optimization algorithms that can be used to guide network design practice. The follows is a tentative list of subjects to be covered:

1. Network Design Problem Modeling
2. Optimization Methods
3. Multi-Commodity Flow Routing
4. Location and Topological Design
5. Fair Network
6. Resilient Network Design
7. Robust Network Design
8. Multi-Layer Networks

Text Book:
"Routing, Flow, and Capacity Design in Communication and Computer Networks", Michal Pióro, Deepankar Medhi
ISBN: 0125571895, Publisher: Morgan Kaufmann (July 1, 2004)
http://www.amazon.com/gp/product/0125571895

Reference Books:

1. "Data Networks (2nd Edition)", D. Bertsekas and R. Gallager.
2. "Telecommunications Network Design Algorithms", A. Kershenbaum.
3. "Network Optimization: Continuous and Discrete Models", D. Bertsekas.
4. "Introduction to Algorithms", T. Cormen, C. Leiserson, R. Rivest, C. Stein.
5. "Introduction to Linear Optimization", D. Bertsimas and J. N. Tsitsiklis
6. "Convex Optimization", S. Boyd and L. Vandenberghe
7. "Integer Programming", L.Wosley.

Grading:
Homework: 20 Points; Midterm: 40 Points; Final/Project: 40 Points

Contact:

1. email: yongliu@poly.edu
2. web: http://eeweb.poly.edu/faculty/yongliu
3. office: LC 258, ext. 3959
4. office hours: 1-3pm, Tuesday.