Course Description:

Network flow problems appear as integral components of large-scale and realistic network design models for tactical and strategic decision-making in a wide range of industrial applications involving movement of raw materials, work-in-process, finished products, parcels/packages, information or passengers over geographical areas. Furthermore, various decision problems that are not on networks, such as production/inventory planning, manufacturing and workforce scheduling problems and project management, can be formulated as network flow problems.

We will review several such applications with a focus on their mathematical modelling and solutions on networks. We will cover well-known network flow problems including the shortest path problem, the maximum flow problem, the minimum cost flow problem, and the multi-commodity flow problem.

Our goals are to provide a sound and applicable knowledge of theory and practice of solving network flow problems with an emphasis on developing a good understanding of algorithm development and analysis. **Prerequisite:** *EMIS 8360 or equivalent background.*

Instructor: Halit Uster  
E-mail: uster@smu.edu  
Caruth Hall 309  
Phone: (214) 768 3575

Textbook:


Tentative Outline:

1. Introduction, Definitions, Applications
2. Algorithm Design and Analysis
3. Shortest Path Problem
4. Maximum Flow Problem
5. Minimum Cost Flow Problem
6. Minimum Spanning Trees
7. Generalized Flows
8. Multi-commodity Flows
9. Network Design Applications

References:

Office Hours:
My official office hours are TuTh 1:00-2:00pm. However, you can stop by anytime when I am in the office. Alternatively, and preferably, you can make an appointment by e-mail. I encourage each one of you to ask any questions you might have on the material during the lecture or right after the class. It is very much to your benefit to get these points cleared as soon as they occur. You are also strongly encouraged to come and see me in the office or make an appointment whenever you have problems.

Grading and Tentative Dates:
20%  Exam 1 - February 18, Thursday
25%  Exam 2 - March 24, Thursday
25%  Exam 3 - April 21, Thursday
30%  Final Exam – May 6, 2016, Friday, 8:00am

[78- 87) B  [75-78) B-  [72-75) C+

- Local distance students are required to take the exam with the regular class in room Caruth 179 during class times on the days set above.
- If you must miss an exam, quiz, or lab assignment, then I must be notified in advance. If your absence is not approved, then you receive a zero.

Online Course Management:
Course materials will be posted on blackboard. These materials will include handouts, study sets, announcements (also via e-mail), grades, and other materials as appropriate. Please check it regularly. Submit all lab assignments on blackboard (http://courses.smu.edu). Your lab, quiz, and test grades will be posted on blackboard. Please make sure that they are correct.

OTHER IMPORTANT INFORMATION

Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit http://www.smu.edu/Provost/ALEC/DASS to begin the process. Once registered, students should then schedule an appointment with the professor as early in the semester as possible, present a DASS Accommodation Letter, and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)