Syllabus of CS622: Distributed Networks
Spring 2004, Credit Hrs: 3, CS Department/College of EAS

Time & Loc.: MW 4:30pm -- 5:45pm, 101 Engineering Building
Instructor: Prof. Xiaobo (Joe) Zhou
Office: 176 Engineering Building, 262-3493 (office), Email: zbo@cs.uccs.edu
Office Hours: MW 5:45 pm--6:45pm, 176 Engineering, or by appointment (email preferred)
Course website: http://www.cs.uccs.edu/~zbo/teaching/CS622/CS622_Spring04.html

Course Description:
This course addresses the fundamental design and evaluation issues involved in Wide Area Networks. It starts with the design of typical voice and data networks that meets functional, performance and cost goals. It gives an overview of various parameters/factors that are important for the planning and design problems in different phases of wide-area computer/communication network planning and management. The course covers foundation materials in queueing models and graph theory. Then, it addresses selected materials in computer/communication networks through topological optimization, network dimensioning, and routing coupled with modeling, algorithms, and analysis tools (Delite) for each problem domain. Overall, you are going to get background and experiences on WAN design approaches/tools, mathematical problem formulations and how to develop and apply algorithms/methods to do WAN planning and designs.

The course also serves you in another way. We are rapidly approaching an era in which the Internet will be the primary means of communication and information exchange. The lectures are also supplied with paper readings on the topic of "End-to-end Quality of Service (QoS) Adaptation and Differentiation on the Internet". We will read and discuss research papers on various aspects of Differentiated Services (DiffServ) provisioning, from network core to end servers: packet scheduling/forwarding, admission control, resource allocation and scheduling, and content adaptation. You are expected to summarize the works in some topics after readings, do simulation or implementation to validate the experimental data in papers (or come up with your own ideas), give a presentation about your work, and participate in the group discussion during the class. The details about the reading assignments and projects will be on course web site. The syllabus and all lecture notes are also available on the course website.

Course Format
The material presented in the course will be complemented by the following required textbook.


Tentative Syllabus

- Introduction of WAN design
- Introduction on DiffServ Provisioning
- 2-Location Voice Network Design
- 3-Location Data Network Design
- Graphs, Trees, and Tours
- Traffic and Cost Generators
- One-speed One-center Access Network Design
- Multi-speed One-center Access Network Design
- Multi-center One-speed Access Network Design
- Mesh Network Design
- Project Presentations
Prerequisites

• CS 522 "Computer Communication". If you want to take the class without the prerequisite, you may take your own risks and it is your responsibilities to make up for the prerequisite.

Grading

The final grade will be composed of

• Attendance 5%
• Homework 15%
• Reading Assignments 15%
• Simulation/Implementation Project and Presentation 25%
• Midterm (in class, open-book & open-notes) 15%
• Final (in class, open-book & open-notes, comprehensive) 25%

Grades will be assigned as follows:

• 92 ≤ {A}; 88 ≤ {A−} < 92
• 84 ≤ {B+} < 88; 80 ≤ {B} < 84; 75 ≤ {B−} < 80
• 70 ≤ {C+} < 75; 65 ≤ {C} < 70; 60 ≤ {C−} < 65
• 55 ≤ D < 60
• E/F: below 55

Requirements

• You are required to attend all lectures, though one absence is not counted. Missing lectures are extremely risky since the teaching pace is fast and the course is heavy!
• Homework (project) assignments are important part of the course and are to be completed individually. There will be about seven homework assignments. Assignments should be due in class on the due date in hard-copy.
• There are about 2 reading assignments (total 8 papers) required for everyone. Each assignment has 3-5 research papers closely related to the same topic.
• There is one project of simulation/implementation and oral presentation.
• Late homework (including reading reports/project) submissions lose 30% of their values per weekday, except under extreme non-academic circumstances, such as illness. In such cases, you have to provide sufficient and convincing proof, i.e., documents from the doctors.
• FOR FAIRNESS, NO MAKE-UP EXAMS, exception is the same as the scenarios above.
• There will be one midterm exam and one final exam, which are open-book and open-notes. The midterm exam will (tentatively) be in class, 4:30pm -- 5:45pm, Mar 8 (Mon), 2004. The final will be in class, 4:30pm -- 7:00pm, May 12 (Wednesday), 2004.

Others

If you have a disability for which you are requesting an accommodation, you are encouraged to contact the Disability Services Office within the first week of classes. The Disability Services Office is located in Main Hall #105. (Phone # is 262-3354).

Cheating, unfortunately, it is necessary to mention it here. Cooperation is not the same as cheating. It's OK to ask someone about the concepts before you start to do homework or project assignments; however, copying other people's code or solution sets is strictly prohibited. Any work submitted for a grade must include the following statement and be signed and dated. If this is missing or not signed and dated, the work will be returned ungraded. Please prepare a big envelope for your homework.

We need the strict rules, because everyone wants to be, and will be, treated fairly in this class!

I have neither given nor received unauthorized assistance on this work.
Signed: Date: