

## Syllabus

*Handout 0**January 14, 2009*

**Location:** FPAT 255 (F. Paul Anderson Tower)  
**Time:** MWF 1:00 pm - 1:50 pm  
**URL:** <http://voip.netlab.uky.edu/~fei/teaching/cs687/index.html>

**Instructor**

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Office hours: MW 11:00 am - 12:00 noon (or by appointment)

**Description**

This course will cover the models, principles, and techniques for implementing network tasks efficiently. It will take a systems approach by encompassing such fields as architecture, operating systems, hardware design, and algorithm design. The objective is to instill a new way of systems-oriented thinking for designing and implementing network functions. The course will cover the design and implementation issues at both end hosts and network routers. Topics to be covered include, but not limited to, data copying, control transfer, timer maintenance, exact-match and prefix-match lookups, packet classification, network measurement and network security.

**Textbook**

George Varghese, “Network Algorithmics: An Interdisciplinary Approach to Designing Fast Networked Devices”, Elsevier (Morgan Kaufmann), 2004.

We will also cover research papers from most recent networking conferences and journals on the similar topics. They will be made available on the class website.

**Prerequisite**

Students are required to have taken a graduate level networking course (CS571) or equivalent. CS 671 is recommended, but not required.

**Grading**

Your grade will be determined by your performance on homework assignments, a presentation, a project, a mid-term exam and a final exam. The tentative weights are as follows:

- Homework assignments - 20%
- Presentation - 15%
- Project - 20%
- Midterm - 20%
- Final exam - 25%

Final grades will be assigned according to the following scale:

A=90-100%, B=80-89%, C=70-79%, D=60-69%, E=0-59%.

No incomplete grades will be assigned unless there exist exceptional, extenuating circumstances. Late submissions of homework and projects will be penalized 10% per day for each day late. They will not be accepted if it is late for more than 3 days. Attendance is mandatory. For each unexcused absence, two points will be deducted from the final average.

### Academic Conduct Expectations

Students are expected to do all assignments themselves, unless explicitly told otherwise. Honest and ethical behavior is expected at all times. There will be no tolerance for plagiarism or other academic misconduct. You may read U.K. Student Rights and Responsibilities at <http://www.uky.edu/StudentAffairs/Code> for a detailed description.

### Schedule

This schedule is tentative and subject to change.

Week	Start From	Topic
1	01/14	Introduction, basic models and principles
2	01/21	Copying data
3	01/26	Transferring control
4-5	02/02	Maintaining timers, demultiplexing, protocol processing
6	02/16	Exact-match lookup
7	02/23	Prefix-match lookup
8	03/02	Packet classification, midterm exam
9	03/09	Switching and Packet scheduling
10	03/16	Spring Break
11	03/23	Network measurement
12	03/30	Network Security
13-15	04/06	Selected Research Papers
16	04/27	Flexible
17	05/04	Monday 8:00am <b>Final Exam</b>