

CSC 7700

Virtualization

Fall 2007

Syllabus

Gerald Baumgartner

Course Summary

We will study a wide range of virtualization techniques and systems, from the Java VM to VMWare to my research projects on a virtual embedded systems testbed and the Organic Grid. We will examine compiler techniques, low-level operating system techniques, as well as the architecture support for virtualization in current processors.

Prerequisites

The equivalent of either

- CSC 4101: Programming Languages.
- CSC 4103: Operating Systems.

Office Hours

Who	Where	Phone	E-Mail	When
Gerald Baumgartner	Coates 290	578-2191	gb	W 1:30-3:30pm

Other office hours by appointment (recommended).

Reading

There is no textbook! This is an experimental research course. We will primarily use material from research papers and product literature.

- Jim Smith, Ravi Nair, *Virtual Machines: Versatile Platforms for Systems and Processes*, Morgan Kaufmann, 2005.
- Course material for *EECS 441 — Resource Virtualization* at Northwestern.
- Mailing list.
- Web page <http://www.csc.lsu.edu/~gb/csc7700/>.

Important Dates

- Labor Day: Sep. 3
- Fall Holiday: Oct. 11–12
- LCPC: Oct. 11–13
- OOPSLA: Oct. 23–25

There will be no exams.

Assignments

This course is designed as a research course. The project you will work on this semester will be a miniature version of a Ph.D. project. As such, the exact number and type of assignments may vary with the project you choose to work on. Typically, there will be

- An annotated bibliography.
- Two short presentations of papers from the literature.
- A project proposal.
- A project of your choice.
- A paper about your project.
- Reviews of the final papers of three class mates.
- A presentation at a mini conference.

Grading

Because the scope and nature of the projects is expected to vary, it is not possible to determine a precise grading scale. The majority of the grade will depend on the project. For the assignments outlined above, the grading might be as follows:

Bibliography	20%
Paper presentations	10%
Project Proposal	10%
Project and Paper	40%
Reviews	10%
Presentation	10%

Topics

The topics we will cover will depend on how fast we progress through the material and on your interest. The following list is a rough guide:

- Virtual machines for languages (Java VM, Microsoft CLR, etc.)
- Virtual machines on parallel hardware
- OS-level virtual machines (VMWare Workstation, etc.)

- Architecture support for virtualization
- Virtual machines for embedded systems
- Overlay networks

Course Policy

Grading

The entire course will be graded partially on a curve. I expect the average grade to be around the cutoff between A and B. For this reason, I will deduct points somewhat liberally. Don't be too upset if you don't get what you consider to be a high score. When grading on a curve the absolute score is not that important. I will give you feedback on where you are standing in class periodically.

Honesty

I will treat you as professionals, and you should plan on conducting yourself as such. This course presents many important concepts you will need throughout your career as a computing professional, so it is important that *each student* do *all* the assignments and projects and learn the material.

You are free to discuss homework assignments and labs with others. However, the solutions you submit are to be developed by yourself. *Cheating is a very serious offense and will not be tolerated.* Supplying others with material is also against this rule. The policy is that the supplier and receiver of information will both be punished.