

CS510 Concurrent Systems

Course Overview

About the Instructor

- Instructor - Jonathan Walpole
 - Professor at PSU
 - Professor and Director Systems Software Lab at OGI
 - Ph.D. Lancaster University, UK
 - Research Interests: Operating Systems, Distributed Systems, Multimedia Computing and Networking

Course Overview

- ❑ Based on ~20 research papers
 - Read them carefully!
 - Submit a written review of each paper BEFORE class!
- ❑ Class structure
 - Student presentations
 - Instructor-led discussion
- ❑ Course web page
[www.cs.pdx.edu/~walpole/class/cs510/winter 2008/home.html](http://www.cs.pdx.edu/~walpole/class/cs510/winter%202008/home.html)

Topics

- ❑ Locking Techniques in OS Kernels
- ❑ Spin Lock Performance
- ❑ Reader-Writer Locking
- ❑ Synchronization on NUMA Architectures
- ❑ Programming for Locality and Scalability on MPs
- ❑ Lock-Free Synchronization
- ❑ Non-Blocking Synchronization
- ❑ Garbage Collection for NBS Approaches
- ❑ Multi-Version Approaches and RCU
- ❑ Memory Consistency Models
- ❑ Transactional Memory

Grade Structure

- Paper reviews - 25%
 - Email to me before class (walpole@cs.pdx.edu)
- Paper presentations - 50%
- Position paper - 25%

Paper Presentations

- ❑ Your paper assignments are posted on the web page
- ❑ Your presentation should last 40 minutes
- ❑ Emphasize key ideas, not irrelevant details
- ❑ Do the necessary background reading!
- ❑ Prepare a formal presentation with slides
- ❑ Send me a draft presentation in time for me to review it and give you feedback
- ❑ Make sure your presentation is of high quality!!!

Position Papers

- ❑ Short paper (<1500 words)
- ❑ Your chance to summarize
 - current research trends in concurrent systems
 - future directions
- ❑ By the end of this class you should have a clear understanding of research directions and challenges
- ❑ I want to know what you think
 - ... not a straight summary of the papers we have studied

Before Class 2

- ❑ Visit the class web page
www.cs.pdx.edu/~walpole/class/cs510/winter2008/home.html
- ❑ Find your first paper assignment
 - I will post them before Wednesday
 - Email me if there is a problem!
- ❑ Read class 1 papers and papers for class 2
- ❑ Submit paper reviews as directed on the class web site