COE 402: Computer System Performance Evaluation

Instructor: Dr. Uthman Baroudi
Lecture: Sun & Tue, 8:30 – 9:45 AM
Location: Bldg. 24-162
Office hours: SSMT: 12-1:00pm
Office Location: 22-144

Catalog Description:

This course will cover the fundamentals of computer performance measurement. Topics include measurement tools and techniques for computer systems and their subcomponents, measurement error, benchmarks, and experiment design for performance measurements.

Prerequisites: STAT 319 and Senior level standing

Course Objectives:

1. To understand how the various components of a computer system affect the total system performance.

2. To demonstrate an ability to apply the correct tools and techniques to computer system performance problems.

Learning Outcomes:

1. Appreciation of the role of performance in modern computer systems
2. Select appropriate tools for various performance measurements
3. Apply techniques to measure performance of CPU, disk, and memory subsystems
4. Apply measurement tools and techniques to uniprocessor and multiprocessor systems
5. Interpret and explain, including statistical analysis, results produced by performance measurement tools
6. Predict and forecast workload and performance parameters of a given computer system
7. Design appropriate experiments to measure computer performance

Textbook:

- **The Art of Computer Systems Performance Analysis** by Raj Jain, John Wiley, 1991. http://www.cis.ohio-state.edu/~jain/books/perfbook.htm

References:

- Measuring Computer Performance: A Practitioner's Guide" by David J. Lilja. Cambridge University Press, 2000.

Grading:

- Homework and programming assignments (15%);
- Quizzes 10% **(EVERY other Tuesday)**
- Project 20%
- Exam–I (March 25th , 2007) 15%
- Exam-II (May 6th , 2007) 15%
- Comprehensive Final Exam 25%

General policy

1. *Check your exam schedule carefully. NO MAKE-UP EXAM will be given.*
2. *NO LATE HOMEWORK will be accepted.*
3. Minimum penalty for cheating is 0 for the homework/project/exam where it occurs.
4. Exceeding **6 absences** without official excuse means DN grade automatically
5. No WP grade will be given for poorly performing students
6. *You are responsible for all the materials covered in the class. So, it is your responsibility to find out what has been covered in those unattended classes.*

Proposed Outline (Subject to Change)

Date	Topic	Reading	Comments
Week 1	**Introduction** Common Mistakes and How to Avoid Them	Chapter 1 & 2	
Week 2	Selection of Techniques and Metrics.	Chapter 3	
Week 3-4	Summarizing measured data	Chapter 12	
Week 5	Comparing systems using sample data	Chapter 13	Project proposal due
Week 6-7	Analysis of Simulation Results. Random- Number Generation. **Exam-I (March 25th , 2007)**	Chapter 25 & 26	
Week 8	Commonly Used Distributions.	Chapter 27	
Week 9	Types of Workloads The Art of Workload Selection.	Chapter 4&5	
Week 10	Workload Characterization & Techniques. Monitors.	Chapter 6&7	
Week 11-12	The Art of Data Presentation. Ratio Games. Summarizing Measured Data. Comparing Systems Using Sample Data. **Exam-II (May 6th, 2007)**	Chapter 10	
Week 13	Introduction to Experimental Design. • 2^k Factorial Designs.	Chapter 16	
Week 14	Introduction to Queuing Theory	Chapter 30	Project submission
Week 15	Project presentation		