CSE 40547/60547: Computing at the Nanoscale

Logistics:

Instructor: Michael Niemier
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Course Time: Officially: Monday, Wednesday, Friday 9:35 a.m. – 10:25 a.m.
                   Actually: Monday, Wednesday 9:10 a.m. – 10:25 a.m.

Course Location: 246 DeBartolo Hall

Website: http://www.cse.nd.edu/courses/cse40547/www/

Texts: None. Course will be paper based.

Course Goals:

By the end of the semester, you should:

1. Have an understanding of what computer architectures and new applications emerging technologies might enable

2. Be able to explain the challenges to current CMOS scaling (at both the device and architectural levels) and consider how an end to Moore's Law might impact application-level performance

3. Be able to explain what industry is doing to "extend CMOS" and continue the performance scaling trends that we have come to expect for the last 30+ years beyond the year 2020. For example, why might 3D integration be a good idea? What are the fabrication challenges? What are the architectural opportunities?)

4. Be able to determine if a new device (i.e. emerging technology) might help to improve the performance of future computational systems and suggest appropriate applications and architectures.

Grading Policy:

Assignments	60%
Final Project	30%
Class Participation	10%

Late Policy:

There will be a 33% penalty for each day assignment is late. Therefore, if an assignment is due at the end of class on Wed. at 10:25, and you turn in the assignment on Thursday at 10:00, your score will be reduced by 33%. If you turn the assignment in at 10:26 on Thursday, your score will be reduced by 66%. After the 3rd day, you will receive no credit.

Collaboration Policy:

For paper reviews and reading assignments, I encourage you to talk with your classmates about what specifically is being discussed – even if you don't have questions!_However, I expect each individual to do any required writing individually.

Where can I get help if I need it?

Because this is a small class, I won't have any formal office hours. I'm usually around so feel free to knock on my door when you need to. Occasionally I may be up against a deadline or in the middle of a conversation or project and may ask you to come back later – but this will be the exception rather than the rule. If you want to be sure I'm in my office before you come by, please call or email and we can schedule a definitive time.

Honor Code

Students are expected to understand and abide by the principles and procedures set forth in the University of Notre Dame Academic Code of Honor (http://www.nd.edu/~hnrcode/) and uphold the pledge that "As a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty."

Course Outline

Below are my initial thoughts for structuring the class. This does not have to be definitive. In fact, if there are topics that you would like to discuss that are not listed, please suggest them and (if appropriate) I'll do my best to integrate the topic(s) into the class. (Note that Lectures 28-29 are flexible.)