CSE 590MO - Syllabus

Instructor:
Mark Oskin
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Office: 325C The Beautiful Sieg Hall
Office Hours: by appointment

Lecture: M, W 9:30 - 10:20 EE1 042
Text: Quantum Computation and Quantum Information by Michael A. Nielsen and Isaac L. Chuang

This will be supplemented at times from literature and Preskill's notes (from Caltech)

The purpose of this course is to provide you with a basic understanding of quantum computing. This includes a grounding in the fundamental constructs, universal quantum gates, basic algorithms, and error correction.

Lecture:
This course will be heavy with math, hence it will be white-board lecture orientated. Please interrupt me often though with questions!

Reading:
You will be expected to read a lot. We will read Chapters 1, 2, 4, 5, 6, 8 and 10. You may also want to read Chapter 7 on your own.

Workload:
There will be about 6 homework assignments. Half of these will be based around implementing concepts from lecture in QCL, a quantum programming language. The other half will be questions from the book.

Grading:
This course is graded Pass/No-pass. A reasonable attempt at all of the homework is sufficient for a pass.

Late Policy: Anything (unless otherwise specified), may be turned in 1 day late so long as you email me an excuse. It doesn't have to be a good excuse in fact it doesn't even have to be the truth. False, but amusing excuses are preferred.

Email1: If you ask me a question that has implications for the rest of the class, or is just generally interesting I may post the response to the class list server.

Email2: You should join the class list server. This class uses majordomo. To join the list, send email with the line "subscribe cse590mo" to majordomo@cs.washington.edu.

Email3: I do not keep "CS" hours. If you email me past 8pm I may very well be asleep. Responses early in the morning have been known to happen, however.

Sickness/Other Serious Matters: Of course if anything seriously bad happens to you during the quarter I will work with you to adjust due dates, etc. Seriously bad is defined as sickness that involved a doctor's visit, a death in the family, etc.

Academic Accommodations: To request academic accommodations due to disability, please contact disabled Student Services, 448 Schmitz, (206) 543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability that requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need in this class.

Remember: If you're not having fun, then it's probably not worth doing.

A tentative list of subjects:

- Week 1 - Linear algebra review / postulates of QC
- Week 2 - Teleportation & Super dense coding
- Week 2 - Deutsch's Algorithm
- Week 3 - Universal quantum gates
- Week 4 & 5 - Shor's algorithm (Factoring)
- Week 5 - Grover's algorithm
- Week 6 & 7 - Quantum error correction
- Week 8 & 9 Quantum Cryptography? Devices?