Course Information

Welcome to CS485/584, Quantum Computing. As prerequisites, you should already know (undergraduate) linear algebra and algorithms. It also helps to be comfortable with probability.

This course is theory-based, for computer scientists. We will learn the basics of quantum information and computation, and see some classic quantum algorithms, including those of Shor and Grover. You will also make an in-class presentation on a more advanced topic. You will not learn quantum physics.

Rough Syllabus: This course has two distinct parts:

First Part (lectures): The first part of the course is lectures, about nine weeks, ending with an exam. We will follow Quantum Computing: A Gentle Introduction by Rieffel and Polak, about a chapter per week. We’ll have short regular homeworks (up to one per chapter, if I can keep up with grading). I expect two exams, with roughly this schedule:

8/29–9/26 (9 meetings): Chapters 2 to 5.
Tuesday 10/1: First exam (in class).
10/3–11/5 (9 meetings): Chapters 6 to 9.
Thursday 11/7: Second exam (in class).

Second Part (talks): The second part is student talks (over 7 meetings, not counting the last day). In groups, students will take turns presenting advanced topics, with two presentations per meeting (so 12–14 group talks). You’ll propose topics during the first part of the course. There will be no homework in this part of the course, and no final exam. (Perhaps I’ll offer some makeup work.)

If we need to make any change to the above schedule, I’ll announce it both in class and on Canvas.

Meetings: We meet 10:00pm-11:15am Tuesdays and Thursdays, in room MSC N306. We will have two in-class exams, as described above. During the second part of the course, you will be part of a group that will making a topic presentation, and you are expected to attend the other presentations (even better, ask some questions!).

Staff: Your instructor (writing this) is Michelangelo Grigni. Contact me by e-mail at mgrigni@emory.edu or by phone at 7-7922. My office is room W426. My office hours, grading policy, and honor policy are all posted on our course page (below).
Grading:  During the first part of the course there will be written homeworks and two exams (each is curved if necessary). In the second part of the course, I’ll grade your group presentation, including also your preparation and support documents. I’ll also expect you to attend and interact with the other talks. For the final course average, I plan to take a weighted average as follows:

- the homeworks (all together) are 40%,
- each exam is 20%,
- your group presentation (and participation) is 20%.

I reserve the right to adjust these weights, but I’ll announce any such change.

Online Support:  Our course home page is

https://cs.emory.edu/~cs485001/

(Even if you are enrolled in CS584, please use the “485” link above.) It should have handouts, materials from each meeting, and other resources. In particular it has a link to the Emory Canvas service, which we will use for announcements, homework, and discussions.

Policies:  The course page (above) also has links to the honor policy, and my grading policy.