Course Information (DRAFT)

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.

This course is organized into two distinct parts, as follows:

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 week, if I can keep up with the grading). The exam is tentatively on Thursday November 7.

Second Part (talks): The second part is more of a seminar, about three weeks. In groups, students will take turns presenting advanced topics, with two presentations per meeting (so about 12 groups total). You’ll propose topics during the first part of the course. There will be no homework or exam on this part of the course.

Meetings: We meet 10:00pm-11:15am Tuesdays and Thursdays, in room MSC N306. We will have one exam, 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. (I may take attendance.)

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 “seminar” part of the course there will be multiple written homeworks (4-7), ending with a midterm exam. In the second part of the course, I’ll grade your presentation (and support documents), and I’ll also keep track of participation (attendance and interaction). To get your final course average, I plan to take a weighted average of the marks, as follows:

- the homeworks (all together) get a total weight of 50%,
- the midterm exam gets a total weight of 20%,
- your presentation (and participation) gets a total weight of 20%.
- class participation (including any quizzes, etc) gets a weight of 10%.

I reserve the right to possibly adjust these weights, but I’ll announce any such change.
**Online Support:** Our course home page is

[https://cs.emory.edu/~cs485001/](https://cs.emory.edu/~cs485001/)

(Even if you are in 584, 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 our honor policy, and my grading policy.