

AM205: Final project information

The final project is worth 30% of the total grade and is due at 5 PM on December 10th (the last day of Reading Period). The project, plus any other associated documents and code, should be submitted in the iSites dropbox.

The project should be completed in teams of two or three students. Single-person projects will also be allowed with permission of the instructor. All team members will receive the same grade for the project. The best place to find team members is on Piazza, by posting some information about yourself and your areas of interest.

Topic

The final project should involve applying methods from the class to an application area of interest. The project should involve some coding, and purely theoretical projects will not be allowed.

It is fine, and in many cases encouraged, to take problems directly from existing research topics. However, in this case, the project should be based on aspect or direction that is carried out specifically for this course, as opposed to simply submitting ongoing or existing work. Two examples of projects are given at the end of this document.

Format and length

The table below gives a *very rough* guideline about the length of the final project write-up.

Team members	Pages
1	9
2	14
3	18

However, the precise length of the write-up is not important; the scientific content of the project is more important, and keeping your write-up concise and to-the-point is preferable.

In addition, there will be an option to submit a poster to the CS poster session on December 9th, 12 PM–2 PM in the Maxwell–Dworkin lobby. Harvard IACS will cover the poster printing costs. Posters must be completed by December 2nd, and details of poster printing will be given nearer the time. Submitting a poster will count as a 25% reduction the length of the project write-up. The poster will not be graded at the poster session itself. A electronic version of the poster must be submitted to the iSites dropbox by the December 10th deadline, together with the project write-up.

Project proposal – deadline November 20th, 6 PM

To ensure the everyone starts off on the right track, each team must complete at least one of the following by November 20th at 6 PM:

- submit a half-page summary of the project, as well as the numerical methods that your team plans to use,
- arrange a half-hour meeting with Chris, Kevin, or Dustin to discuss a project idea and direction.

Four points will be automatically awarded for doing this.

Grade breakdown

The project will be graded out of 60 points. A complete breakdown is shown below.

- **4 points** – Automatically awarded for completing the project proposal by the deadline.
- **8 points** – Project motivation: what problem are you trying to solve? What has been done before in this area? If appropriate, cite relevant books and papers.
- **24 points** – Project methods and results: what mathematics and code did you develop for your problem? Where appropriate, did you consider mathematical analyses of your approach? Is the code that you developed correct?
- **6 points** – Project conclusions: did you solve what you set out to do? What are possible limitations and problems with your approach? How you could you develop the project further?
- **18 points** – Project presentation and organization, divided among the follow categories:
 - write-up clearly written with good spelling and grammar,
 - figures and tables clear and properly labeled,
 - code well-commented and well-organized.

Two example projects

Two examples of suitable projects are below:

- Kevin took the course in Fall 2013, and completed a final-project in a three-person team. His project involved solving the Poisson and Helmholtz equations, and used the multigrid method and an adaptive Runge–Kutta method for integration.
- Chris took a similar computing course during graduate school. He was already developing a serial code for his thesis to study mixing in granular materials. For the class he developed two parallel versions of the code, which required the consideration of a new set of implementation issues.