Math 455—Fall 2017
More Information About Projects and Reflection Essays

The project

The main task for the project is to give your classmates an understanding of what the topic is about and how discrete mathematics contributes to solving the motivating problem. So you need to explain what the problem is, why it’s interesting and hard, and tell us something about how it’s solved (or at least approached) mathematically. So you need to distill and synthesize information, rather than try to present the full details. You might be able to say something about how key theorems are proved, but you almost certainly won’t have time to give full proofs.

You’ll have only about 25 minutes for your presentation, and you need to leave at least some time for questions (whether at the end of your presentation or during it). You can use the projector if you want to use PowerPoint or Beamer/\LaTeX or some other such tool; you can also use the blackboard or the overhead projector. You should certainly plan on rehearsing your presentation to get the time and logistics down! Part of your job is to communicate (teach!) something, not just recite some things you learned; you need to think hard about how to do that. (If you want to try out the projector at some point to make sure your presentation works, let me know. And you should certainly have backup for technical problems: e.g., more than one laptop, slides downloaded to a laptop and a memory stick, rather than relying on a network connection, etc.)

Each team will also have to create a written record of your project, to be submitted when you make the presentation. This should be a 6–10 page expository paper explaining the material in your presentation. The script of your presentation can form the basis for this, but it should not just be the script along with the slides as figures. This paper should be submitted electronically as a pdf file. You will also submit the slides (if any) or other materials from your presentation. Finally, I will ask each of you for a short evaluation of each team member’s contribution.

I have asked each team to give me a brief description of their chosen topic (by email) by Tuesday, November 14. It’s probably better not to have two teams doing the same topic, so the first group that turns in (an acceptable) description will get that topic. You can (and are definitely encouraged to) talk to Lian and me about the topics and about the presentations as you develop them. We can help answer questions about the appropriate amount of detail, ways to present tricky material, etc. Lian has regular office hours and you can make appointments with either of us. Depending on how things seem to be
going, I may ask you to submit a draft of your presentation during the last week of November.

We have 5 teams. We might be able to squeeze in 3 presentations in a class period. But that might be hard, so we will start the presentations on Tuesday, December 5, to be sure that we finish by December 12. (If there’s time left at the end, I will cover some more material on combinatorics.) We’ll talk in class about the order in which presentations will be made (if there are no volunteers, I’ll select teams at random, so you’ll all need to be ready by December 5). I will expect all of you to attend all the presentations, and I’ll ask you to fill out an evaluation on each presentation (other than your own). These will contribute to your grade. All the written material for the projects, including the pdf version of your slides (but obviously not the short descriptions of your team members’ contributions) should be submitted as a team. All of that written material will be due on Friday, December 15, so that you have a little time, for instance, to respond to questions from your presentation.

Note that we will be covering new material in class through the rest of this month, with problem sets, and we will have a second exam before presentations start.

Reflection Essay

The first of the criteria established for the IE courses is that they provide “a structured, credited context for students to reflect on and to integrate their learning and experience from the broad exposure in their General Education courses and the focus in their major.” The IE documents say

“Reflection” within the context of the General Education Integrative Experience has a particular meaning, one that may be distinct from how you and your colleagues usually think about student reflection in your classes. In virtually all courses, students are asked to reflect upon the course content (e.g., students are asked to consider “How would I apply this theory I just learned to this new situation?”; “How do I interpret and analyze this character’s actions within the context of the novel?”; “Which of the formulas is most appropriate for this question?”, etc.). In these cases, students’ reflection is focused exclusively on the course content, based on how they will apply that content to an assignment, task, etc.

For the Integrative Experience requirement, however, students are also expected to engage in self-reflection on themselves as learners. For example, the Integrative Experience asks that students consider their college learning as a whole and identify how their varied experiences connect with each other and help shape the student as a lifelong learner, a member of a profession or disciplinary community, and/or as a citizen and member of the larger society. This focus upon self-reflection as a learner gives students structured opportunities to synthesize the various aspects of their college education and
to consider how their experiences inform their work in their major, their career/graduate school preparation, and their role as global citizens.

Your assignment is a 1500-2000 word essay (longer if you wish) that describes the learning experiences you have had at UMass that you think have played a role in how you approach the project, but also in how you think about what you’ve learned as a math major, and how that will inform your work, studies, etc., after college. For instance, you may find that an Economics course you took for a Gen Ed requirement has relevance to your project or changed the way you think about the way mathematics is applied. Or you may feel that Gen Ed courses have little to do with what you have done as a math major, but have had (or maybe not had?) a significant impact on what you want to do after college. You should reflect on what you have learned about yourself as a learner, within the math major and outside it. Include specific examples to support what you say.

This is not a composition course and I won’t be too strict about grammar, etc. But whatever you do after college, you are almost certain to find that you have to do more writing for colleagues, supervisors, investors, customers, etc., than you expect, and those people will judge you in large part by the quality of your written communication. (This is even true for research mathematicians, who are judged by their papers, grant proposals, etc.) You should take this essay seriously and do a good job on both the reflection and the writing.

These essays will be due at the start of the time the final exam is formally scheduled. That is 1 pm on Wednesday, December 20. They should be submitted electronically, as pdf files, and should be emailed to me.