

A Final Project Poster Presentation at a Science Festival

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Outline

- The Big Idea
- The small ideas
- About the course
- The nuts and bolts
- The festival
- Evaluation

The Big Idea

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Students developing their
science and math
communication skills,
both oral and written,
and adapting to the audience.

The Big Idea #2

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Students apply the math
learned in class
to science problems
they are interested in.

The small ideas

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- A sense of community service, of connecting with children and teenagers, of participating in STEM education.

About the course

- “Linear algebra, probability and statistics for the life sciences”, one semester course.
- Small (9 students last year).
- A mix: mostly first- or second-year students, 2 graduate students.
- Prerequisites: integral calculus.
- Prequel: “Modeling and Differential Equations for the Life Sciences” (multivariable calculus and differential equations).
- Other options for learning this material: a standard course in multivariable calculus, then one in linear algebra and differential equations. Not particularly applied. Or a one-semester course in multivariable calculus for the social sciences.

The nuts and bolts – expectations

- Read and understand a scientific article that uses math from our course and applies it to the life sciences.
- Write a 10-page report, explaining the math and the application. The goal is for your peers in the course to be able to read your report and understand the math and the application.
- Present your project:
 - ▶ at the Cambridge Science Festival to children and their parents, or
 - ▶ in a regular presentation in front of the class.
- Alone or in teams of two.

The nuts and bolts – timeline

(Weekly homeworks for a semester-long course.)

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- Audience was children taken by their parents (sometimes children taking their parents).
- Location was not very accessible, and starting time was 10am on a Saturday towards the end of the semester.

Evaluation

- Evaluation rubrics for the oral presentations, provided to students in advance.
- Opportunity for extra credit if go over expectations.
- Adapted from Emma Smith Zbarsky (Wentworth Institute of Technology) and the Association of American Colleges and Universities learning rubrics.
- During festival, I took notes on the printed rubrics for each student, then later went back and turned those into a grade. Also allowed me to give written feedback on their work.

Students loved it!