O'Brien Tenure Materials
April 2022

Artifact #1:
In the spring semester of 2021, I mentored two of my students—Christopher Schack and Ragib Ratul—when they formed a team to participate in the NYC CS4All Hack League. Their task was to collect data from their community and "to design, prototype, develop, and evaluate apps, games, and websites that address real-world community issues". With my supervision, Ragib and Chris surveyed fellow Lehman students, asking them about the most challenging aspects of remote learning. They discovered that students were having trouble keeping track of assignments and deadlines. Chris and Ragib developed a web application, the Lehman Schoolwork Manager, to help students manage their homework assignments.

I was very proud of the app Chris and Ragib made. It combined web development skills with sophisticated use of the Google Sheets API. I was also gratified when their project won 5th place in the citywide competition. Not only was this a well-earned reward for Chris and Ragib's hard work, it also provides an inspiration for other Lehman students to get involved in CS. While my coursework precluded my involvement with the hack league this year, I hope to get involved in coming years. This artifact is the final presentation from Ragib and Chris.

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Artifact #2: Lesson plan

My second artifact comes from my precalculus class, where I've been teaching a unit on linear algebra. At his point in the unit, students have learned a number of linear algebra techniques, including finding the inverse of a square matrix and Gaussian elimination. At the point where this lesson takes place, they are developing skills in applying those techniques to solving real world problems.

There are several things I found interesting about this unit and in particular this lesson. First, students are asked to use their mathematical knowledge to solving real problems, using techniques that would be used in the real world. Second, the lesson in question required students to demonstrate knowledge via written communication. Not only is this in line with Lehman's instructional practice, but it also allowed students with a creative way to discuss mathematical concepts. In coming years, I hope to develop this unit into a year- or semester long course in linear algebra. In addition to the problem seen in this particular lesson, I think this topic has a lot of potential in connecting mathematics to a wide variety of real world applications, including computational modeling of problems in business, science and engineering, along with machine learning.

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Artifact #2: Student work
This is representative student work, which students started during the lesson and continued working on as homework. For classwork/homework, grading is strictly based on completion. While I provide feedback that will help students reflect and improve their work on assessments, all of the assignments here received a grade of 100%.