TEACHING STATEMENT

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As someone who sees a future in academia, teaching is one of the most important skills that needs to be honed. My teaching career started when I was a graduate student. My experience was greatly enhanced during the last three years as a Visiting Assistant Professor at the University of Massachusetts Amherst and an Associate Lecturer at the University of Massachusetts Boston. In the last three years, I taught higher level courses along with teaching full sections of Calculus. As a result, I had the chance of teaching a variety of students - freshmen groups consisting of medley of majors to specialized Math/Physics/Computer Science seniors. Evidently, I had to adopt different styles of teaching for different groups of students.

While teaching courses like Calculus where there are as many as sixty students from diverse majors, my approach to teaching is example driven, with an emphasis on group work, as the time can provide. I strive to bringing abstract concepts to life with practical, relatable examples.

On the other hand, teaching seniors/masters students requires a distinct approach, given their advanced knowledge and inherent motivation. I have taught Introduction to Scientific Computing and Fourier Methods (twice). The latter is a course designed by us (with Robin Young) which has now been accepted as a permanent course in the Mathematics curriculum. It is offered every Spring and has been taught by me since its development.

In such courses, I focus on complex, multi-faceted problems that integrate various concepts. Though this results in me doing less problems during the class, I am able to explore the underlying concepts in depth and also allow for subtle variations in the question itself. For example, in the Fourier Methods class, while reviewing Complex Analysis, I demonstrated an Olympiad problem, which has also been solved by Grant Sanderson, on his Youtube channel 3blue1brown, `https://www.youtube.com/watch?v=bOXCLR3Wric`. I gave my students a very similar problem on the homework and referred to them the video along with the class notes. This is one of the examples where I strive to have my students engaged deeply with the material, that enhances their problem-solving skills and critical understanding.

I often explore the same problem with slight modifications to the hypotheses, helping students understand why certain conditions are necessary and how results vary with small changes. This practice not only solidifies comprehension but also sharpens analytical skills. For example, trying to redo a proof after allowing for specific subtle changes in the hypothesis and then showing the proof/counterexample, whatever the case may be, enables the students to actually feel why the given hypothesis was in that form and in what way would the result sustain/breakdown after the change. This helps the student to effectively understand the result/theorem rather than just memorizing it and consequently, it stays in the memory for a much longer time.

For graduate classes, I am selective with homework assignments, choosing problems that encourage critical thinking without overwhelming students. Additionally, I strive to make graduate classes more discussion-oriented, where students benefit from actively engaging with the material and exchanging insights with their peers. I have been getting great feedback from the students. I am especially proud of a comment in my evaluations made by a student from my Fourier Methods class in Spring '23 - 'I am also the only girl in the class and not once did I feel

like that was an issue. This is exactly how it should be of course but that can be rare in STEM classes'.

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